



US Army Corps  
of Engineers  
Puerto Rico District



Defense Environmental Restoration Program  
for  
Formerly Used Defense Sites  
Ordnance and Explosive Waste

# Archives Search Report

## FINDINGS

for

# Culebra Island National Wildlife Refuge

Culebra, Puerto Rico  
Project Number I02PR006802

February 1995



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DEFENSE ENVIRONMENTAL RESTORATION PROGRAM  
for  
FORMERLY USED DEFENSE SITES

FINDINGS

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

February 1995

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ORDNANCE AND EXPLOSIVE WASTE  
 ARCHIVES SEARCH REPORT  
 FOR  
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 CULEBRA, PUERTO RICO  
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FINDINGS

TABLE OF CONTENTS

Section	Page
1. INTRODUCTION.....	1
a. Subject and Purpose	
b. Scope	
2. PREVIOUS INVESTIGATIONS.....	2
a. 1991 DERP-FUDS Preliminary Assessment	
b. Other Investigations	
3. SITE DESCRIPTION.....	3
a. Existing Land Usage	
b. Climatic Data	
c. Topography	
d. Geology and Soils	
e. Hydrology	
f. Natural Resources	
g. Historical/Cultural Resources	
4. HISTORICAL ORDNANCE PRESENCE.....	12
a. Chronological Site Summary	
b. Ordnance Related Records Review	
c. Interviews with Site Related Personnel	
5. SITE ELIGIBILITY.....	24
a. Confirmed Formerly Used Defense Site	
b. Potential Formerly Used Defense Site	

6.	<b>VISUAL SITE INSPECTION.....</b>	<b>26</b>
	a. General Procedures and Safety	
	b-q. Areas A thru P	
7.	<b>EVALUATION OF ORDNANCE HAZARDS.....</b>	<b>33</b>
	a. General Procedures	
	b-q. Areas A thru P	
8.	<b>SITE ORDNANCE TECHNICAL DATA.....</b>	<b>46</b>
	a. End Item Technical Data	
	b. Chemical Data of Ordnance Fillers	
9.	<b>OTHER ENVIRONMENTAL HAZARDS.....</b>	<b>51</b>
	a. Hazardous, Toxic, and Radiological Waste	
	b. Building Demolition/Debris Removal	

**TABLES**

2-1	DERP-FUDS Preliminary Assessment Projects
3-1	Current Land Usage
3-2	Natural Resources
4-1	Summary of Chronological History
4-2	Ordnance Incidents 1965-1969
5-1	Property Qualified in FDE
5-2	Disposition of Qualified Property
7-1	OEW Presence
8-1	USMC Weapons/Ordnance
8-2	Coastal Defense Weapons
8-3	Submarine-Launched Torpedos
8-4	Surface Gunnery Ordnance
8-5	Aerial Ordnance
8-6	Ordnance Verified
8-7	Chemical Data of Ordnance Fillers
9-1	Potential HTRW and BD/DR Considerations

## APPENDICES

- A. REFERENCE SOURCES
- B. REFERENCES AND ABSTRACTS
- C. GLOSSARY
- D. TEXTS/MANUALS
- E. REPORTS/STUDIES
- F. LETTERS/MEMORANDUMS/MISCELLANEOUS ITEMS
- G. REAL ESTATE DOCUMENTS
- H. NEWSPAPERS/JOURNALS
- I. INTERVIEWS
- J. PRESENT SITE PHOTOGRAPHS
- K. HISTORICAL PHOTOGRAPHS
- L. REFERENCE MAPS/DRAWINGS
- M. ARCHIVES SEARCH REPORT CORRESPONDENCE
- N. REPORT DISTRIBUTION LIST

## REPORT PLATES

- 1. SITE MAP
- 2. RANGE LAYOUT CIRCA 1972 WITH LIVE IMPACT AREA ZONES
- 3. LOCATIONS OF REPORTED ORDNANCE
- 4. PROJECT AREAS
- 5. AREA A
- 6. AREAS B & C
- 7. AREAS D, E, F, I, J, M, & P
- 8. AREAS G & H
- 9. CURRENT LAND OWNERSHIP

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1. INTRODUCTION

a. **Subject and Purpose**

(1) This report presents the findings of an historical records search and site inspection for ordnance and explosive waste (OEW) presence located at the Culebra Island National Wildlife Refuge, Culebra, Puerto Rico. See plate 1 for general location map. The investigation was performed under the authority of the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP FUDS).

(2) The purpose of this investigation was to characterize the site for potential OEW contamination, to include chemical warfare material (CWM). This was achieved by a thorough evaluation of historical records, interviews, and an on-site visual inspection.

b. **Scope**

(1) This ASR covers the entire land area of Culebra Island and the nearby keys, about 7,300 acres of land, and also includes 85,200 acres of the surrounding water. The only property not included is the 87.5 acres still owned by the Navy. The historical section covers the period from 1898 until gunnery exercises ended in 1975.

(2) This report presents the site history, site description, real estate ownership information, and confirmed ordnance presence, based on available records, interviews, and the site inspection. It further provides a complete evaluation of all information to assess potential ordnance contamination where actual ordnance presence has not been confirmed.

(3) For the purpose of this report, OEW is considered unwanted and abandoned ammunition or components thereof, which contains or contained energetic, toxic, or radiological materials, and was manufactured, purchased, stored, used, and/or disposed of by the War Department/Department of Defense.

## 2. PREVIOUS INVESTIGATIONS

### a. **Preliminary Assessment**

A Preliminary Assessment of the Culebra Island National Wildlife Refuge was conducted by the Jacksonville District (CESAJ) in 1991 (see document E-1). That report qualified 2660 acres as FUDS-eligible and recommended referral to CEHND for an evaluation of confirmed ordnance contamination. This assessment did not include the entire 92,500 acres addressed in this ASR. Table 2-1 represents an overview of the PA phase.

Project Number	DERP Category	Present Phase	Comments	Location
I02PR006802	OEW	SI	Ordnance or explosive contamination	See INPR (doc E-1)
	OEW	IRA	Interim removal	Flamenco Beach, 3 acres, see plate 6
I02PR006801	HTRW	SI	OSD Priority 2	Lower Camp see plate 8
	BD/DR	-	No projects recommended	

### b. **Other Investigations**

(1) In March 1993, Wayne Galloway of CEHND and Robert Bridgers of CESAJ visited Culebra in connection with proposed interim removal at the Flamenco Beach campground area. The contractor for the interim removal, MTA, developed a site specific work plan and some useful OEW information was obtained from this document (ref B-112).

(2) Although the team found that other government agencies had done archeological and environmental studies of Culebra (refs B-87 & B-111), none provided any significant information on OEW. Other relevant information has been extracted from these reports and is included in the appropriate sections.

### 3. SITE DESCRIPTION

#### a. Existing Land Usage

(1) Although this site has been named Culebra Island National Wildlife Refuge, the name is misleading. There is Culebra Island, and there are about 20 keys surrounding Culebra Island. Most of these keys are owned by the Fish & Wildlife Service (FWS). Total land area is about 7300 acres, and the FWS owns only about 1500 of these acres. The rest is owned by the Commonwealth of Puerto Rico (about 1200 acres), primarily the Department of Natural Resources (DNR), and private owners (about 4600 acres). DNR owns all water from the high tide mark out to 9 miles. See table 3-1 for a breakdown of areas and plate 9 for ownership of the entire site.

(2) The Findings and Determination of Eligibility (FDE) dated 24 Dec 1991 qualified 2660 acres as eligible for consideration under DERP-FUDS (see document E-1). However, upon completion of the site visit and review of historical material from National Archives, it was determined that all of Culebra Island, all of the keys, and all of the water within the boundary of the Naval Defensive Sea Area should be considered a FUDS site. Document L-12 shows the limits of the Naval Defensive Area, and the boundary is also shown on plate 1. This will be further explained in section 5.

**TABLE 3-1  
CURRENT LAND USAGE**

Area	Topo Name	Other Names	Documented Former Usage	Current Usage	Current Owner**	Approximate Size, Acres
A-1	Isla Culebrita	Culebrita	OP, torpedos, & strafing	Wildlife refuge	FWS	266
A-2	-	Culebrita North Bay	Strafing	Water & beach	FWS, DNR	100
A-3	Cayo Botella	Ladrone Key	Aerial bombing & rockets	Wildlife refuge	FWS	3
A-4	Cayos Geniqui	Palada Keys	Aerial bombing & rockets, torpedoes	Wildlife refuge	FWS	4
A-5	Cayo Tiburon	Shark Key	Aerial bombing & rockets	Wildlife refuge	FWS	1
A-6	Cayo Ballena	Whale Rock	-	Wildlife refuge	FWS	1
A-7	Cayo Sombrerito	Pajarito Key	-	Wildlife refuge	FWS	1
A-8	Cayo Norte (eastern)	Northeast Key	Possible run-in line to Cayo Botella	Undeveloped 1 part-time resident	Juan de la Cruz Padron	254
A-9	Culebra Island (eastern)	-	-	Undeveloped several residences	DNR, FWS, & private	598

\*\* DNR owns all water from the high tide mark out to 9 miles.

**TABLE 3-1 (continued)  
CURRENT LAND USAGE**

Area	Topo Name	Other Names	Documented Former Usage	Current Usage	Current Owner**	Approximate Size, Acres
B-1	Cayo de Luis Pena	Luis Pena Key	OP, radar site, run-in line	Wildlife refuge	FWS	342
B-2	-	North Bay, Luis Pena Key	-	Water and beach	FWS & DNR	80
B-3	Cayo del Agua	Water Key, Agua Cay	Aerial bombing & rockets	Wildlife refuge	FWS	2
B-4	Cayo Yerba	Yerba Key	-	Wildlife refuge	FWS	3
B-5	Cayo Raton	Mono Cay	-	Wildlife refuge	FWS	3
B-6	El Mono	Roco Negra, Black Rock	-	Wildlife refuge	FWS	1
B-7	Cayo Lobo	Cross Key	Aerial bombing & rockets	Wildlife refuge	FWS	20
B-8	Cayo Lobito	-	Flight line approach marker	Wildlife refuge	FWS	7
B-9	Alcarraza	Fungy Bowl	Aerial bombing & rockets	Wildlife refuge	FWS	7
B-10	Los Gemelos	Twin Rocks	Aerial bombing, rockets, and missile	Wildlife refuge	FWS	2
B-11	Cayo Botijuela	Roca Lavador	-	Wildlife refuge	FWS	1

\*\* DNR owns all water from the high tide mark out to 9 miles.

**TABLE 3-1 (continued)**  
**CURRENT LAND USAGE**

Area	Topo Name	Other Names	Documented Former Usage	Current Usage	Current Owner**	Approximate Size, Acres
C-1	Flamenco Peninsula	Northwest Peninsula	Naval gunfire, aerial bombing & rockets, strafing	Wildlife refuge, dump undeveloped	FWS, DNR, private	572
C-2	Flamenco Beach	Playa Flamenco	Naval gunfire	Beach, hotel campground	DNR & private	25
C-3		Peninsula Shoreline	Naval gunfire	Wildlife refuge	FWS & DNR	15
C-4	-	Carlos Rosario Beach	-	Water & beach	FWS & DNR	100
C-5	Piedra Stevens	Roca Pilots, Pilot Rock	-	Wildlife refuge	FWS	2
C-6		All other area C	-	Water, dump, & undeveloped	DNR & private	8327
D	-	Mortar Range	-	Grazing	Private	80
E	-	Airfield rifle range	-	Housing & undeveloped	City & private	22
F	-	Southern rifle range	-	Mostly undeveloped some houses	DNR	43
G	-	Lower Camp	Navy & Marine base	FWS & DNR offices, freshwater plant, open	DNR	60

\*\* DNR owns all water from the high tide mark out to 9 miles.

**TABLE 3-1 (continued)  
CURRENT LAND USAGE**

Area	Topo Name	Other Names	Documented Former Usage	Current Usage	Current Owner**	Approximate Size, Acres
H	-	Lower Camp dumps	-	FWS & DNR offices	DNR	1
I	Cayo Matojo	Matojo Cay	-	Wildlife refuge	FWS	1
J		Navy gun sites (7 each)	Possible coastal defense batteries	1 known residence & unknown	FWS, DNR, & private	13.83
K	-	Mining West	Aerial mining range	Open water	DNR	2,438
L	-	Marine water minefield	-	Open water	DNR	142
M	-	Confirmed water	-	Fishing	DNR	419
N	-	All other water	-	Fishing & swimming	DNR	57,284
O	-	All other land	Possible Marine training & gun sites, possible Army gun sites, coaling station & unknown	Mostly undeveloped some houses	DNR, FWS, & private	4,764
P	-	Flamenco Point OP	not eligible for DERP-FUDS		Navy	87.5

\*\* DNR owns all water from the high tide mark out to 9 miles.

## **b. Climatic Data**

(1) Culebra has a tropical marine climate with year-round warm temperatures. The average daily temperature is about 80° Fahrenheit (F), with the summer months (May through October) being slightly warmer than the other months. The average maximum is about 86°, while the average minimum is about 74°. The lowest ever recorded was 60° in February of 1973, while the highest was 95° in July of 1969. Average water temperature is about 80°, with a yearly low of 77° and a high of 83°.

(2) The average yearly rainfall is 36 inches, ranging from a low of 16 inches in 1967 to the 59 inches recorded in 1942. The heaviest average rainfall occurs in October, May, September, and November, with August through November being the rainy season. The driest months are usually January through April. The greatest amount of rainfall ever recorded was 27 inches in May of 1979, while the least amount was 1/4 inch in March of 1958. In the summer months (May through November), the rainfall occurs more often in the form of brief showers. In the winter months, most of the rainfall from one or two prolonged major weather systems followed by extensive dry periods.

(3) The average annual humidity is about 73%, with a daytime average of about 65% and a nighttime average of about 80%. The most humid months are August through January, though the other months are only slightly lower in humidity.

(4) The prevailing winds blow from the east-northeast November through January from the east all other months. Average speed is 8 knots. The hurricane season lasts from June through November, with most storms occurring July through September. These storms form well east of the Caribbean and frequently track near Puerto Rico as they move westward. Severe hurricanes occur every 10 to 20 years. The worst hurricane in recent memory was Hugo, which struck in September of 1989, causing extensive damage to Culebra and all of Puerto Rico. The Roosevelt Roads Naval Station recorded an all-time high wind gust of 104 knots from this storm (refs B-107 & B-108).

## **c. Topography**

(1) Culebra Island and the surrounding keys exhibit a variety of topographic features. Culebra Island has sandy beaches, irregular rugged coastline, lagoons, coastal wetlands, steep mountains, and narrow valleys. Ninety per cent of the island is mountainous, and the level areas are primarily in the vicinity of the airport and the town center. The highest point on the island is Monte Resaca, which is about 630 feet high.

Most undeveloped areas are covered with vegetation ranging from moderate to extremely dense. Each area will be described separately in section 6.

(2) The three largest keys are Culebrita, Cayo Norte, and Luis Pena. These resemble Culebra in that they all have sandy beaches, rugged coastline, and gentle to steep hills. Vegetation ranges from moderate to extremely dense. The smaller keys are primarily solid rock, with sparse or no vegetation. A few of the smaller keys have tiny beaches, while most are rugged rock all around. Each key will be described separately in section 6 (refs B-91 & B-106).

#### **d. Geology and Soils**

(1) Culebra and the adjacent keys are underlain by volcanic and intrusive rocks of probable Upper Cretaceous age. Andesite lava and Andesite tuff are clearly dominant. Toward the north-central part of Culebra and on the east Cayo Luis Pena, the tuff and lava contain diorite porphyry inclusions. These volcanic rocks no longer exhibit porosity, due to compaction and the filling of pores with quartz and calcite. See document E-2 for a geological map of Culebra (ref B-87).

(2) Culebra has a limited variety of soils types, owing to its volcanic origin, small size, rugged terrain, and moderately uniform climate. Its total acreages consist of about 75% soils of the Descalabrado series, formed in slopes of 20% to 40%. The Flamenco Peninsula is totally of the Descalabrado series, which is well-drained with rapid runoff and moderate permeability. Generally, the soils are between 12 and 24 inches thick, with hard volcanic rock underneath. See document E-3 for a soil map of Culebra (refs B-87 & B-106).

#### **e. Hydrology**

(1) Fresh water has always been a scarce resource, as there are no major, permanently flowing streams on Culebra. Creeks and streams are intermittent and seasonal. Normally they are dry and only collect and drain runoff water during rainstorms. There are about a dozen natural springs and seeps, but they are only charged after particularly wet seasons. There are some wells 10-20 feet deep in areas away from coastal seepage, but these wells are high in chloride concentrations and salinity. Most of Culebra gets their fresh water from the desalinization plant the Navy installed at the Lower Camp (ref B-87).

(2) Culebra is separated from Puerto Rico by about 17 miles of the Vieques Sound. The waters surrounding Culebra to

the south are the Caribbean Sea, while the northern waters are considered the Atlantic Ocean. These warm, clear waters provide a home for a wide variety of sea life and attract scuba divers from all over the US.

(3) National Oceanic and Atmospheric Administration (NOAA) chart #25653 shows water depths averaging about 70 to 90 feet in the areas surrounding Culebra and the keys (see document L-8). However, there are some areas over 130 feet west of the Flamenco Peninsula and east of Cayos Geniqui. This chart also shows "Caution Unexploded Ordnance" in the northern and western areas. A local diving instructor said the bottom is mostly sand, which shifts to cover or uncover underwater objects. The US Geological Survey has an underwater mapping project of the Culebra area tentatively scheduled for 1995.

(4) Tidal data for Culebrita Island shows that tides are chiefly diurnal. The difference in height between mean higher high water and mean lower low water is 1.1 feet. The mean tide level is .6 feet. Daily tidal information for 1994 can be found at document E-4 (ref B-104).

(5) Tidal currents for the Vieques Sound (southwest of Culebra) flow twice a day. The maximum ebb direction is 355 degrees true at .6 knots, while the maximum flood tide is 180 degrees at .4 knots. Daily current information for 1994 can be found at document E-5 (ref B-105).

#### **f. Natural Resources**

(1) Ms. Teresa Tallevast, manager of the National Wildlife Refuge, provided a listing of threatened and endangered species in and around Culebra. This information is provided at table 3-2 (ref B-95). It will be essential for site contractors to maintain close coordination with the Fish and Wildlife Service and DNR to avoid disturbing any of these species.

**TABLE 3-2**  
**NATURAL RESOURCES**

Classification	Common Name	Status
Mammals	Sperm Whale	Endangered
Birds	West Indies Brown Pelican	Endangered
	Peregrine Falcon	Endangered
	Roseate Tern	Threatened
Reptiles	Hawksbill Sea Turtle	Endangered
	Leatherback Sea Turtle	Endangered
	Green Sea Turtle	Threatened
	Loggerhead Sea Turtle	Threatened
	Virgin Islands Tree Boa	Endangered
Plants	Culebra Giant Anole	Endangered
	Wheeler's Peperomia	Endangered
	Cactus (Leptocerus grantianus)	Endangered

(2) While table 3-2 lists threatened and endangered species, there are numerous other sensitive resources that must also be protected. This includes mangroves and off-shore coral formations. In addition, Ms. Tallevast stated that burning would not be allowed on Culebrita and Cayo Luis Pena because the virgin vegetation is a sensitive habitat. The Fish & Wildlife Service is likely to allow burning on their area of the Flamenco Peninsula.

(3) There are additional natural resources that site contractors should consider. The poisonous manzanillo tree is present on Flamenco Peninsula and probably other areas. The mesquite acacia has long, sharp thorns which cause irritation. Mosquitos, while not a hazard, are an annoying distraction. In the water, fire coral and sea urchins can cause severe pain, as can sharks (nurse, sand, lemon, and hammerhead) and moray eels (ref I-10).

#### **g. Historical/Cultural Resources**

Mr. Miguel Bonini of the Puerto Rico Office of Historic Preservation provided sensitive information about the many archeological and historical sites on Culebra, some of which have been recently discovered and have not been publicly disseminated. He stated that very little is known about the archeology of Culebra and there may be additional sites. He added that the Fish & Wildlife Study (ref B-87) is the most thorough work on Culebra. When planning site remediation, the COE will need to maintain close contact with the SHPO to avoid disturbing the known sites as well as additional sites that may exist.

#### **4. HISTORICAL ORDNANCE PRESENCE**

##### **a. Chronological Site Summary**

(1) Spain transferred all of Puerto Rico to the US in December 1898 after signing the Treaty of Paris formally ending the Spanish-American War. In December, 1901, President Theodore Roosevelt signed General Order 75 placing all of Culebra's public lands under the jurisdiction of the Navy Department. This was amended by subsequent Executive Orders (ref B-42).

(2) Exactly when the military presence began is unknown, but in 1901 or 1902 the Navy set up a base (Lower Camp) where the Culebrans had established the town of San Idelfonso. The town was moved to the present location of Culebra City and was renamed Dewey after the famous Admiral. The Navy also set up a coaling station near Ensenada Fulladosa (refs B-43 & B-87).

(3) The US Naval Fleet was first sent to Culebra for maneuvers in October 1902, and used the area extensively in succeeding years. The US Marines made their first landing on Culebra in early 1903, and over the next 40 years used the area extensively to practice amphibious landings and ground maneuver training (ref B-98).

(4) In 1914, the Marines used Culebra Harbor to train new pilots on seaplanes. The Navy temporarily abandoned the Lower Camp between about 1920 and 1942, though they still held fleet maneuvers in the area. Sometime around 1920, the Navy built a small grass airstrip in the center of the island west of Lower Camp. Also in the 1930s, the Navy and Marines built temporary tent camps at several locations near the airstrip (refs B-100, B-103, B-113, & B-122).

(5) Navy records use 1936 as the year naval bombardment began on the Flamenco Peninsula. From then on, the Navy used Culebra and the keys for gunnery training until ordnance use was

terminated on September 30, 1975. Live ordnance operations reached their peak in 1969 as the fleet was training pilots for Viet Nam. The Navy constructed barracks, helicopter pads, range instrumentation facilities, three observation posts (OPs) spotting stations, targets, a desalinization plant, and other facilities which were transferred from government ownership after the range was closed. The only property still owned by the Navy is the 87 acres of the abandoned OP at Flamenco Point, which will eventually be turned over to GSA for disposal (refs B-1, B-80, & B-98). Table 4-1 provides a summary of site history.

**TABLE 4-1  
SUMMARY OF CHRONOLOGICAL HISTORY**

Date	Action
Dec 1998	Treaty of Paris signed, Puerto Rico ceded to US
Dec 1901	President Roosevelt places public lands under Navy jurisdiction
circa 1902	Lower Camp Navy base established
Oct 1902	US Fleet holds first naval maneuvers
1903-1941	Marines hold training exercises
circa 1920	Airfield constructed
circa 1935	First Naval gunnery at Flamenco Peninsula
circa 1964	Expansion of range to include eastern and western keys
1971	Ordnance use ends on eastern keys
Sep 30, 1975	All ordnance use ends
circa 1985	Flamenco Point OP closed
1975-1982	All property (except OP) transferred

(6) Government files and newspaper articles indicate there was a large amount of ill will between the Navy and the Culebrans in the late sixties/early seventies over the live-fire exercises and a proposed expansion of the range. This became a major political issue, with Congressional intervention and visits leading to a 1971 agreement signed by the Secretary of the Navy, the Governor of Puerto Rico, and the Mayor of Culebra (see documents F-3, H-1, & H-2).

## b. Ordnance Related Records Review

### (1) Introduction

Research efforts began with a thorough review of all reports, historical documents, and reference material gathered during the archival search. During this review, an effort was made to focus on areas of potential OEW contamination as described in the OEW project summary sheet as well as additional areas that were identified during the research.

### (2) Marine Corps Training - 1902 to 1941

(a) A 1902 sketch of the base at Lower Camp shows a "store shack" for storekeeper and ordnance property and numerous facilities for Marines (ref B-87). This sketch also shows a trail heading west to the "target range", possibly the airport rifle range shown on later maps. The first known Marine amphibious landing on Culebra took place in early 1903, and they brought a 5" gun which a platoon moved through rough terrain. This training included the use of guns and underwater mines to defend the island (refs B-97 & B-98).

(b) A major Marine exercise was held in January of 1914, with the First Advanced Base Brigade defending the island against an attacking force of 1200 men. One book said that "Bombardments of the shore fortifications were made, operations were conducted for the discovery of minefields, and attempts made to drag for the mines." and "...the portable railroad was constructed to the gun positions high on the hills, gun-pits dug, platforms built, guns mounted. Mine fields had been laid...gun and mine practices have been of great benefit..." (ref B-124). Another reference describes an artillery duel between the defenders and the attacking ships and "a barrage of blanks and a battery of searchlights..." (ref B-98). One book also mentions that Navy destroyers did mine sweeping trials at Culebra (Panama) in January and February 1914 (ref B-143; the author probably confused Culebra PR with an island of the same name on the Pacific side of the Canal Zone).

(c) Document L-10 is a map dated December 12, 1913. This map represents a plan for defending Culebra in the forthcoming exercises, a plan which closely matches the description of the mock battle described in paragraph 3 above. The map shows 3" and 5" guns on Culebra and Cayo de Luis Pena as well as defensive positions all over Culebra, Cayo de Luis Pena, and Isla Culebrita. It also shows six camp sites and two rifle ranges. In addition, there are landing areas shown on Culebra, Culebrita, Cayo Norte, and Cayo de Luis Pena. The map also shows

numerous contact mines and dormant controlled mines in the waters to the south and west of Culebra.

(d) A February 19, 1916 Navy map shows the Lower Camp with a Naval magazine and a smaller Marine magazine. A June 1953 map shows the Naval magazine as "Old magazine" (see documents L-1 & L-2). A 1992 FWS archeological survey dig found a spent cartridge case and numerous bottles in the area of the eastern garbage dump (ref B-87, see plate 8). This is the only known OEW-related item found in the Lower Camp.

(e) Fleet maneuvers held January through April of 1922 involved two companies landing field artillery up to and including 155mm guns on Culebra. Also during 1922 exercises, a submarine landed an observer on Playa Larga. A much larger Fleet Exercise was held December 1923 through February 1924, with 3,300 Marines participating. The defense force had 6 155mm guns, 12 75mm guns, and 18 machine guns, and included engineers, gas and signal troops plus aviation, balloon service, antiaircraft units, and a light tank platoon. The attackers were the 5th Marine Regiment including a gas platoon (NOTE: This is the only indication of possible CWM). The mock battle included "insufficient naval bombardment", lost boats, and boats landing on the wrong beach (refs B-89 & B-124). A March 1924 letter indicates that the Marines leased their own property for artillery and infantry positions (see document F-1).

(f) The Fleet Exercise in 1923/24 was well-documented by service photographers, as books show several photos of troops and equipment landing on the shores. One particular photo appears to have been taken on the Flamenco Peninsula (see photo K-2). Another photo shows a huge fleet at anchor off west of Culebra (see photo K-1).

(g) A September 28, 1934 memorandum from the CG, Fleet Marine Force, details the planning for the upcoming exercises. The memo addresses "...the use of certain surrounding hills for temporary gun emplacements for 155mm guns, 75mm pack howitzers, and .50 cal A.A machine guns..." and states "...a suitable area for use as a combat range for infantry weapons is also desired...". In a separate paragraph, the memo describes an area on Flamenco Peninsula "...requested for actual fire problems for infantry, light artillery, and aircraft weapons." The final paragraph reads "The decision as to where the experimental naval gun fire is to be conducted will be made by the Commander, Special Service Squadron. That Officer has tentatively selected Cross Cay." (Cayo Lobo) (see document F-2).

(h) The Fleet Landing Exercise (FLEX-1) which took place January through March 1935 involved new tactics, as the

Marines fired all their organic weapons "...rifles through machine guns and 81mm mortars to the new 75mm pack howitzers against beach targets..." presumably from the boats. The Navy practiced shore bombardment and aircraft engaged in bombing and strafing practice. A similar exercise, FLEX-2, was conducted in January and February of 1936 (refs B-98 & B-102).

(i) The Marines constructed a rifle range at the site of the airfield. This was identified in the 1913 map as an "old rifle range" (see document L-10). A 1938 aerial photo shows what appear to be firing butts, and a 1944 map of the airfield shows these as brick walls (see documents K-14 & L-3). A 1947 map of the airfield shows them as "ruins of brick walls" (see document L-4). The 1913 map also shows an "old rifle range" south of Culebra City near the coaling station (see document L-10).

(j) There were additional exercises that were not as well documented. A February 1938 aerial photo shows a large camp (Camp R.E. Rowell) with hundreds of tents set up on the harbor southeast of the airfield (see photo K-14). A March 1939 photo shows at least 40 large ships at anchor just west of Culebra (see photo K-15). Culebra's final known amphibious exercise was FLEX-7, which took place 4-16 February 1941. This included the 1st Marine Brigade and the Army's 1st Infantry division as well as Marine air support and naval gunfire (refs B-98 & B-102).

### (3) Coastal Defense Artillery

(a) Records indicate that the Army planned to establish coast artillery units on Culebra. A September 1942 letter from the War Department has a priority list for new 6" coastal defense batteries, with #312 (Culebra Island NW Point) and #313 (Culebra Island Dolphin Head) as numbers 48 and 49 out of 82 sites (see document F-7). An April 1943 letter includes the two Culebra batteries on a list concerning auxiliary power equipment. However, two current publications on coastal defenses both indicate the the two sites were never actually built (refs B-116, B-129, & B-130).

(b) The Navy was also involved in coastal defense. A 1950 property map shows what appear to be 7 gun sites (1 thru 7) in southern Culebra (see document L-5). A 1968 real estate map shows five gun sites (2,3,4,5, & 6) and indicates they were purchased in 1903 (see document L-6). A 1982 quitclaim deed refers to 6 pound, 4", and 5" gun mounts transferred to DNR (see document G-2). The sites of these Navy guns do not match the Marine sites in the 1913 map (see document L-10) or the locations of the Army sites described above.

#### (4) 1940 - 1959 Activity

(a) Records show that the Navy abandoned the Lower Camp in the 1920s but reactivated it in 1942 before again reducing it to caretaker status in September 1944. Aerial photos taken in 1943 show the camp in use (see photo K-16). An aerial photo taken January 1945 shows the impact area, including the lagoon, overlaid with target grids (see photo K-3). This photo shows a fenceline or break between Navy and private property, as do photos K-9 and K-15. Documents L-6 and L-7 shows this break as the boundary of Navy property. It does not appear that the property southeast of this line was part of the impact area, though stray rounds likely fell there. Navy use continued after WWII, and an errant bomb killed 9 sailors at an OP in 1946 (see document H-2).

(b) A June 1949 report from NAS Roosevelt Roads states that units conducted 2 air strikes and 50 bombardment exercises on Culebra in fiscal year 1949. A similar report for July through December 1949 showed one air strike and 29 bombardment exercises. This report also listed the war reserve ordnance stocks of GP bombs, aerial depth charges, fragmentation bombs, aviation ammunition, small arms, and aircraft rockets (see document E-9). Other letters show that in May of 1950 the Navy considered closing the Culebra range, but later decided to keep it open, possibly due to the outbreak of the Korean Conflict (ref B-119).

(c) The Navy's use of Flamenco Peninsula continued in the 1950s. An October 1950 property map shows the border of the impact area extending northeast to southwest through the center of the lagoon, beyond the boundary of the Navy-owned land (see document L-5). Other maps show the large Navy-owned area east and south of Flamenco Point identified as an "operations area" with no information on its usage (see document L-6).

(d) A November 1959 letter authorized the CO of Submarine Squadron Two to fire 14 live torpedos at Cayos Geniqui from a range of 1000 yards. This letter included instructions to suspend firings while EOD teams searched for duds (see document F-8). Other Navy records indicate that submarines also fired torpedos at Marc Point on Culebrita but stopped prior to 1969 (see document E-7).

#### (5) Viet Nam Era Training

(a) Most of the remaining information in this section was extracted from a 1972 Navy study, portions of which are included as documents E-6, E-7, and L-12. The study contains

excellent information on 1969 activities and recent range operations, but it does not contain a great deal of specific pre-1969 data. It is likely there was additional ordnance used (and possibly other targets) not addressed in the study and the following paragraphs.

(b) Until the early sixties, Flamenco Peninsula, Los Gemelos, and Alcarazza had been the only aircraft targets in the complex. To support increased training needs for Viet Nam, the Navy acquired adjacent keys to the east and west and constructed facilities for aircraft ranges. The main observation post (OP)/range control center at Flamenco Point was supplemented by additional OPs on Culebrita and Cayo de Luis Pena. In addition, spotting stations were built on Cayo Lobo, Flamenco Peninsula, Culebrita, and on Duck Point on the eastern side of Culebra. All of the OPs and some of the spotting stations had helipads, and the three OPs also had living accommodations. A run-in line was constructed on Cayo de Luis Pena and a similar line was planned for Cayo Norte. The Navy installed electronic scoring equipment, searchlights, bullseye targets, and strafing targets on the keys. The OP at Cayo de Luis Pena received a Nike-Ajax radar for general range surveillance as well as tracking aircraft doing loft and over the shoulder bombing (refs B-10, & B-15, see documents E-7 and K-6 through K-12).

(c) Navy records show that the Flamenco Peninsula was the only target area for naval gunfire support (NGFS) training. Targets were four old Sherman tanks as well as trucks and panels. Ships normally fired from a range of 2,000 to 12,000 yards, usually sailing parallel to the coastline heading northwest. In 1969, US ships fired live 40mm, 3" 50 caliber (3"/50), 5"/38, 5"/54, 6"/47, and 8"/55 rounds. In some instances, this firing was directed at 81mm white phosphorous (WP) spotting rounds fired from near the Flamenco Point OP. It is likely that 81mm illuminating rounds were also used. The range was also used by ships from the Coast Guard as well as from the following foreign countries: Great Britain, Canada, Germany, The Netherlands, France, Brazil, Colombia, and Venezuela. These foreign ships fired live rounds varying from 3" to 5". Aircraft bombing and strafing of the Flamenco Peninsula ended around 1970 and the use of live rounds for NGFS ended in 1971. Naval ships fired only quieter smoke (puff) rounds from then on (ref B-14, see documents E-7, H-3, and photos K-9, 11, & 12).

(d) Aircraft strafing targets were constructed at Flamenco Peninsula and Culebrita. The keys used in 1969 for aircraft bombing/rocket targets were: Alcarazza, Los Gemelos, Cayo de Agua, Cayo Tiburon, Cayos Geniqui, and Cayo Botella. During 1969, the following Navy aircraft used the range complex: F-4, F-8, A-4, A-6, A-7, OV-10, P-2, and P-3. In addition,

Puerto Rican Air National Guard F-104s and T-28s as well as Air Force B-52s and United Kingdom aircraft made limited use of the range (refs B-10 & B-20, see document E-7 and photos K-6 through K-10).

(e) Navy records indicate that in 1969 only Bullpup missiles with inert warheads were fired at Los Gemelos. Culebra had been considered as a Walleye range but this apparently never went beyond the planning stage. Another document mentions the Zuni rocket but does not clearly state it was fired. Aircraft ordnance expended during 1969 included 20mm HE/HEI projectiles, Mk 44 & Mk 45 flares, various live and practice bombs up to 500 lbs, and 2.75" rockets. The Navy study added "...it is understood that inert 2,000 pound bombs have been dropped during B-52 exercises. The ordnance used by United Kingdom aircraft varied from 28 pound to 1,000 pound bombs and 2-inch rockets." (ref B-16, see document E-7).

(f) Most Navy aircraft flew to the ranges from aircraft carriers, though sometimes they came from nearby NAS Roosevelt Roads. They normally flew over their targets in racetrack patterns about 2 by 6 miles as shown on plates 3 and 4. The lowest altitude was about 500 feet with inert ordnance and 800 to 1000 feet with live ordnance. Night bombing was conducted with illumination by aerial flares or searchlights and the use aircraft radar. Alcarazza and Los Gemelos were favored for high altitude radar bombing (see document E-7).

(g) The aerial mining range (west) south of Cayo de Luis Pena became operational in 1967 and is shown on plate 4. The east range near Culebrita was never used. For this training, aircraft would fly inbound at 300 feet before dropping drill mines at specific coordinates (see document E-7). Later, these mines would be recovered by EOD swimmers or minesweepers. These mines may have contained flares and/or small buoys that were released to indicate that the minesweepers had properly simulated procedures to detonate the mine (ref B-149).

(h) In 1970, the Navy discontinued use of all the targets on the eastern side as well as Cayo del Agua and the west aerial mining range on the western side. Ordnance operations on the entire Culebra complex were terminated 1 October 1975 (ref B-3, see documents E-7 & F-4).

#### (6) OEW Removal

(a) A 1972 Navy report estimated that ships had fired 750,000 rounds at the Flamenco Peninsula, with 80% being 5" rounds. Ten per cent were 3", 6", and 8" rounds. The balance included other calibers including mortars, howitzers, and 16"

rounds. This report also estimated that from 1942 to 1968, 320,000 units of aerial ordnance were delivered, up to 1000 pounds (see document E-8).

(b) Navy records indicate that EOD personnel used to routinely remove surface duds from the target areas (see document E-7). Although complete records are unavailable, the Navy did make attempts to clean the range. An underwater clean-up was started in December 1970, but a court injunction stopped it after claims that demolition was destroying coral and killing fish. Clean-up was complicated by the November 1973 passage of Public Law 93-166, which provided \$12,000,000 to relocate the Culebra range but prohibited decontamination at US expense (see document F-5). The Puerto Rico Army National Guard apparently did a range clearance in 1985, but records of this operation are not available (refs B-29, B-30, & B-112).

(c) Messages indicate that EOD searched Ladrone Cay in March 1973 and found several expended Mk 76 and Mk 106 practice bombs, which were left in place. Records also indicate that in both 1976 and 1978 EOD went to Culebra to dispose of ordnance that had been collected by visitors to Flamenco Beach and transported by DNR to the Lower Camp (see document F-9). In January 1983, after being notified by a scuba diver, EOD divers found a Mk 27 torpedo east of Cayos Geniqui, two 500 pound bombs west of Cayos Geniqui, and one 500 pound bomb west of Cayo Ballena (see document F-10). There is no record of the disposition of these items (ref B-24).

#### (7) Impact areas

(a) Document E-6 shows the impact areas for ordnance that was used in the early 1970s. Document E-7 defines the impact area as "...the zone around a target in which ordnance aimed at the target is likely to fall, except in the rare cases of gross error, plus an allowance for the distance to which explosive effects of live ordnance and scattering of debris from inert ordnance could extend from the point of impact." The bombs and rockets impact area has a 1.5 mile radius for inert ordnance and a 3 mile radius for live ordnance, implying that for live ordnance the inner 1.5 miles is the target area and the outer 1.5 miles is fragment distance.

(b) Plate 2 represents the 1.5 mile impact area shown for the seven known 1969 aerial targets. The 3,000 yard (1.7 miles) distance is used for shore bombardment, using the middle of Flamenco Peninsula for its center. The 1.5 mile aerial bombs and rockets impact area is not shown for the Flamenco Peninsula, as it is included within the 3,000 yard circle. Similarly, the 1 x 1/2 mile impact area for aerial strafing at

Culebrita is not shown because it is included in the impact area for Ladrone Cay. Also, because the launch points are unknown, plate 2 does not show the impact area for the Bullpup missile or the torpedos. The size of these impact areas forms the basis for defining areas A, B, and C.

(8) Ordnance Incidents

Although ships and aircraft were firing at specific targets, there were documented incidents where the ordnance missed its mark, sometimes by a long distance. Document H-2 has a listing (provided by the Navy) of the incidents in a five-year period and includes the 1946 incident where an aircraft dropped a bomb on the OP and killed 9 sailors. The 1965-69 information is summarized in table 4-1 below.

TABLE 4-2 ORDNANCE INCIDENTS 1965-1969				
Date	Ordnance	Intended Target	Actual Target	Comments
10/13/65	5" projectile (2 each)	Flamenco Peninsula	Cayo de Luis Pena	US Navy destroyer
10/19/65	5" projectile (4 each)	Flamenco Peninsula	Cayo de Luis Pena	Australian destroyer
11/5/65	5" projectile (2 each)	Flamenco Peninsula	S of Cayo del Agua	USS Stickle
3/24/69	3" projectile (3 each)	Flamenco Peninsula	Cayo de Luis Pena	LST USS Fort Snelling
6/18/69	20mm practice round	Isla de Culebrita	Eastern Culebra	Marine aircraft
12/1/69	Mk 76 practice bomb	Cayo del Agua	Culebra Harbor	Marine aircraft
NOTE: Data obtained from document H-2.				

c. Interviews With Site-Related Personnel

(1) The team spoke with the Mayor of Culebra our first day on site. Mr. Soto said that there is ordnance in the water almost everywhere, but especially around the keys. He said the Navy dropped practice bombs on southern Culebra until 1944, and he thought that the Navy fired torpedos at the north side of Culebra. He did not think Cayo Lobito or Cayo Norte were ever used as targets. He related incidents of bombs missing their targets, and told of the death of the child from a dud round and

other non-fatal injuries. He also told about the Navy men killed when the bomb hit there OP (see document I-1).

(2) Mr. Abraham Pena is the supervisor of the Puerto Rico Department of Natural Resources (DNR), which owns some of the property on the Flamenco Peninsula. He knew of OEW on the Flamenco Peninsula but nowhere else on DNR property. He did not think that Cayo Norte was ever a target. Mr. Pena knew of an old rifle range at the airport, and he had heard that solders had fired and left small arms all over Culebra. He also knew the Navy had two dumps at Lower Camp, but to his knowledge there was no ordnance. He told us that his uncle was killed many years ago after putting a bullet in a fire, and also said that several sailors were killed in an accidental bombing (see document I-2).

(3) LT Robinson is the Chief of Police on Culebra. He said that most OEW would be found on Flamenco Peninsula west of Culebra, and he did not think there was any OEW on Culebra itself. He said that someone swept the beach with metal detectors several years ago. He added that ships from other countries including Canada and Argentina used to bomb the peninsula. He also related the incident where the Navy accidentally bombed the OP and killed several sailors (see document I-3).

(4) Mr. Amaro is a firefighter in Culebra. He has seen huge projectiles in the water west of Flamenco Peninsula, and admitted to recovering other projectiles and chipping off the rotating band. He said he has found clips of bullets near the airport (see document I-4).

(5) While diving from his boat, Mr. Luis Molero has seen large (12" or 16" diameter) projectiles in the water around Cayo Raton, Cayo Yerba, and Cayo del Agua. He has also seen unidentified tubular items about 3' long and 5" in diameter in the shallow water off the north beach of Cayo de Luis Pena (see document I-5).

(6) (a) Mr. Ricardo Pena grew up in the Cerro Balcon area northeast of Lower Camp. He remembers the naval infantry (Marines) on Culebra when he was a child in the 1920s and 1930s because he used to visit them at Lower Camp. He showed us structures that were used for ammunition storage of small arms and projectiles. Mr. Pena took us to the range and showed us the firing point and impact area. He described items which resembled artillery projectiles, and said the Marines fired at silhouette targets. He added that rounds would occasionally overshoot and land near his house with a big blast and smoke. In the impact area, Mr. Pena showed us where he found the dud projectiles he took home many years ago and described how his brother Alberto

was knocking them together when one exploded, killing him (see photos J-48 through J-52).

(b) Mr. Pena also took us to the airport and showed us the general area of the rifle range where he said fragments of the concrete walls still exist (see photo J-53). He said the Marines only fired rifles and pistols at targets that moved up and down. He also described a small pile of 3 or 4 bombs up in the hills of Flamenco Peninsula. Mr. Pena related the story of several sailors killed by a stray bomb. He said that the only Culebra areas with ordnance are Flamenco Peninsula and the mortar range near Cerro Balcon (see document I-6).

(7) Mr. Ramon Feliciano is the former Mayor of Culebra. He said he used to live on Flamenco Peninsula, but his family was kicked out by the Navy in 1937. He said that most ordnance can be found west of Culebra, and foreign ships used the range also. He added that most aerial ordnance was dropped on the eastern keys, and the Walleye missile was fired on Culebrita and Cayo de Agua. Mr. Feliciano said that the Navy fired torpedos at Marc Point, and there was a moving target for aircraft on Cayo Lobo. He is unaware of any ordnance dropped on Cayo Norte, but he said the Marines fired at the airport and left ordnance all over the island in the 1930s. He told of the boy being killed in 1936 and subsequent non-fatal injuries. He said 9 sailors were killed in 1944 when an aircraft dropped a bomb on the OP by mistake (see document I-7).

(8) Mr. Henry Morales works for the Fish & Wildlife Service. He was certain that no ordnance was dropped on Cayo Norte and Cayo Lobito, and he thought Cayo Sombrerito and Cayo de Luis Pena were never targets. He has seen numerous bombs on the Flamenco Peninsula. He said there was a strafing target in the water west of Culebrita and showed us the metal poles still protruding from the water (see document I-8).

(9) Mr. Gene Thomas is a scuba instructor and has made about 20,000 dives in 20 years on Culebra. He previously served in the Navy on a torpedo boat. He said that he has seen underwater OEW virtually everywhere to the west and east of Culebra, with the highest concentration in the area west of Flamenco Peninsula. He has seen everything including bullets, bombs, 16" projectiles, and torpedos. Mr. Thomas added that there is a dump area southwest of Culebra City with lots of brass and other items. He expressed concern over boaters and divers who handle OEW, and he pointed out three areas which he felt should be high priority for clean-up. He said the bottom is mostly sand, and this frequently shifts, covering and uncovering reefs as well as ordnance (see document I-9 and plate 3).

(10) Ms. Teresa Tallevast is the manager of the National Wildlife Refuge and has lived on Culebra for 6 years. She knows of ordnance contamination on FWS property including Flamenco Peninsula and most of the keys. She was unaware of OEW anywhere else on the main island, including her Monte Resaca parcel (the operations area). Her main OEW concerns were the coastline of Flamenco Peninsula as well as the same three areas Mr. Thomas mentioned: the north side of Culebrita, the north beach of Cayo de Luis Pena, and Carlos Rosario Beach off Flamenco Peninsula. She added that endangered species are common to the area, and any site visits and clean-up should be coordinated with her way in advance (see document I-10).

(11) Ms. Nadeen Decicco owns property on Punta Caranero where there are apparent remains of a gun battery built in 1906. She said other residents have told her there are similar sites on the island and that they were constructed but never used. She said they have done some digging and have found belt buckles and wooden barrels but no type of ordnance. Ms. Decicco said she does not want the Corps doing any digging or disturbing her property (see document I-11).

(12) While interviewing Culebra residents, the ASR team did not feel they were getting exaggerated or misleading answers. The people all seemed sincere and forthright in responding to our questions. They told different versions of the local boy killed playing with OEW and of the sailors killed in the OP bombing, but both these incidents were subsequently verified by Navy documents. The team was impressed with the assistance offered by the residents of Culebra.

## 5. SITE ELIGIBILITY

### a. **Confirmed Formerly Used Defense Site**

(1) Former land usage by the War Department of the 2660 acres qualified in the FDE was previously confirmed for the site as summarized in section 4a of this report. The site was used by the Marines as a maneuver area and then by the Navy as a firing range. A recent map showing the former federal property is provided as document G-1. A 1925 property map is provided as document L-9. Table 5-1 provides a summary of the qualified property.

**TABLE 5-1  
PROPERTY QUALIFIED IN FDE**

Location	Size, acres	Comments
Culebra Island	1980.3	Lower Camp, shore, gun sites, Flamenco Peninsula, ops area, airport, S Peninsula
Culebrita	266	OP, strafing range, torpedo range
Cayo de Luis Pena	342.5	OP
Cayo del Agua	7	Aerial bombing
Adjacent cayos	63.82	Aerial bombing
Total qualified	2659.62	

(2) Except for the 87 acre site of the Flamenco Point OP, all property owned or leased by the Navy has been disposed. The three quitclaim deeds are provided as documents G-2 through G-4. Table 5-2 summarizes the present usage of the qualified acreage.

**TABLE 5-2  
PRESENT USAGE OF QUALIFIED PROPERTY**

Grantee	Acres	Comments
DNR	935.98	Southern Flamenco Peninsula and other areas.
FWS	1500*	Northern Flamenco Peninsula, keys, and other areas.
Airport Authority	79.73	Runway and terminal area.
Public Housing Authority	32.34	Southeast of airport
City of Culebra	155.9	Future port area
Coast Guard	4*	Lighthouse on Culebrita
*indicates approximate acreage		

## **b. Potential Formerly Used Defense Site**

(1) Following personal interviews and historical research, the ASR team concluded that the potential FUDS acreage is much greater than the 2660 acres qualified in the FDE. While this figure accurately represents what land the Navy officially had title to, in reality the Marines and then the Navy either controlled, used, or flew over the entire area shown in plate 1 (92,500 acres).

(2) There is a file of real estate records available at Roosevelt Roads, and given enough time, one could probably come close to accounting for every acre the Navy officially controlled in recent years. This would be a futile effort, however, as these records do not accurately reflect all the areas that were used by the Marines between 1902 and 1941, notably the acre mortar range discovered by the ASR team. A 1925 property map implies that this area was leased by the Navy but provides no other information (see document L-9). There is no other historic documentation that mentions this mortar range. In his autobiography, a Marine general states that "I rented the whole of Culebra..." for training in 1923 (ref B-150).

(3) Another related issue is the matter of property boundaries. Records indicate there has been a tremendous amount of confusion over property lines, some of which continues to this day. Apparently the Spanish Crown never had precise boundaries of private property, and the accountability did not improve when the US took over in 1898. In addition, current property maps show lot boundaries but frequently omit ownership information and in some cases, show an owner who gave up the property long ago (e.g. US Navy). Obtaining precise ownership and historical real estate information is nearly impossible (refs B-46, B-74 thru B-80, & B-92). See plate 9 for the best available information on property ownership.

(4) Based on documents obtained and cited in paragraph 4b that the entire island and its keys were in some way "used" if not actually owned or leased, it seems the most practical course of action is for CESAJ to amend the FDE and qualify the entire 92,500 acres within the Naval Defensive Sea Area as FUDS eligible. This total includes 7,300 acres of land and 85,200 acres of water.

## **6. VISUAL SITE INSPECTION**

### **a. General Procedures and Safety**

(1) During the period of 29 September to 6 October 1994, members of the Assessment Team traveled to Culebra Island and

many of its keys. The primary task of the team was to assess OEW presence and potential due to its former usage as a naval gunnery range. Site inspection was limited to non-intrusive methods; i.e. subsurface sampling was not authorized or performed.

(2) Real estate rights-of-entry were not obtained by the team due to the willingness of the current owners to allow the team to visit their property. As such, control and jurisdiction of the site remained with the owners during this inspection.

(3) A site safety plan was developed and utilized by the assessment team to assure safety from injury during the site inspection of this facility. Prior to the inspection, a briefing was conducted which stressed that OEW should only be handled by military EOD personnel (ref B-132).

(4) Prior to the site visit, a thorough review of all available reports, historical documents, texts, and technical ordnance reference materials gathered during the historical records search portion was made to ensure awareness of potential ordnance types and hazards.

#### **b. Area A: Aerial Bombing and Rockets (East)**

(1) Isla de Culebrita is a large island with moderate to steep hills and light to dense vegetation. It has sandy beaches as well as rocky shoreline. The former OP remains as an unmanned Coast Guard lighthouse. On the northeast corner is Marc Point, a rugged cliff and former torpedo impact area. On most of the island, walking appears to be reasonably easy. From the boat, the team did not observe any OEW on Culebrita (see photos J-1 & J-2 and plate 5).

(2) The North Bay of Culebrita is a popular area for boaters. There are several smooth beaches as well as a few rocky sites. In the water remain the old support poles for the water strafing targets. Beyond the beach is dense vegetation. The ASR team swam in, walked about one mile of beach, and did not observe any OEW or any evidence of the former inland strafing target (see photos J-3 & J-4 and plate 5).

(3) Cayo Botella is a small key with mostly rocky shores and light vegetation. The team swam in to the one beach area and walked the island 360°. Except for some rugged areas, walking on the island is fairly easy. The top is fairly level and covered with short grass. On the key, the team observed large quantities of MK 76 practice bombs and fragments of an HE bomb with the suspension lugs. The team observed practice bombs in the shallow water off the beach as well as a MK 80 series bomb (see photos J-5 thru J-8 and plate 5).

(4) Cayos Geniqui is actually two rugged keys that are barely connected by a narrow path of rocks. The western key has a small rocky beach area, sparse vegetation, and is somewhat level on the top. The other key is solid rock. Walking is difficult on both keys. The team swam in to the western key and observed some ordnance components, including a MK 14/15 snakeye fin used on MK 80 series bombs (see photos J-9 thru J-11 and plate 5).

(5) Cayo Tiburon is a rugged, inaccessible key without any vegetation. It is totally covered with rocks and there is no beaching area. Once a person gets on the key, walking will be difficult. The team did not go on this key and did not observe any OEW from the boat (see photo J-12 and plate 5).

(6) Cayo Ballena is similar to the adjacent Cayo Tiburon. The team did not observe any OEW from the boat (see photo J-13 and plate 5).

(7) Cayo Sombrerito has a rugged, inaccessible shoreline. There is a slight amount of vegetation on the fairly level top of the key. The team did not observe any OEW from the boat (see photo J-14 and plate 5).

(8) The eastern half of Cayo Norte is included in area A. This large island has moderate to steep hills with light to heavy vegetation. Most of the southern island has accessible shoreline, but there are rugged rocky areas in the north. There is one part-time residence. The team viewed the southeastern part from the boat and did not observe any OEW (see photos J-15 & J-16 and plate 5).

(9) A small portion of eastern Culebra is included in area A. This section includes mostly rugged shoreline, moderate to steep hills, and moderate to heavy vegetation. There are several scattered residences. The team viewed this area from the boat and did not observe any OEW.

#### **c. Area B: Aerial Bombing and Rockets (West)**

(1) Cayo de Luis Pena is a large island with moderate to steep hills and moderate to heavy vegetation. There is some accessible shoreline as well as some rugged shore areas. The team viewed this from the boat and did not observe any OEW (see photo J-17 and plate 6).

(2) The North Bay of Cayo de Luis Pena is a popular site for boaters. It has smooth sandy beaches with a few areas of rocks. The team swam in, walked about a mile of beach, and did not observe any OEW. The team did observe some suspicious items

in the shallow water off the beach, but was unable to positively identify the items as ordnance due to the algae growth (see photos J-18 & J-19 and plate 6).

(3) Cayo del Agua is a small key with a rocky beach and a mix of level areas and rough rocks. There is a small amount of short grass and brush. Visitors can walk the entire key without difficulty. The former target area has numerous tires as well as a concrete box. The team observed numerous OEW items, including a MK 76 practice bomb and fragments of an HE bomb with the suspension lugs (see photos J-20 thru J-22 and plate 6).

(4) Cayo Yerba is a small key with a rugged rock shoreline. It has sparse vegetation and steep rocks. It would be difficult, though not impossible, to walk most of this key after one manages to land safely. The team viewed this site from the boat and did not observe any OEW (see photo J-23 and plate 6).

(5) Cayo Raton is similar to Cay Yerba (see photo J-24 and plate 6).

(6) El Mono is a tiny pile of rocks. The team viewed this from the boat and did not observe any OEW (see photo J-25 and plate 6).

(7) Cayo Lobo is a large key with a rocky shoreline and one beach area. The team swam in and walked up a slight hill to reach the bowl-shaped target area in the center of the key. The tires are still there, though some are buried under the thick grass. There are four concrete structures on the highest points of the island. Most of this island and some of the shoreline can be walked without great difficulty. The team did not observe any OEW (see photos J-26 & J-27 and plate 6).

(8) Cayo Lobito is a large key with a rugged shoreline. There are steep rocks all around the key, with an almost flat and sparsely vegetated area on the top. A navigation marker is on the highest point. On one end of this key is a large rock formation which is even more rugged than the main area. The team viewed this key from the boat and did not observe any OEW (see photo J-28 and plate 6).

(9) Alcarraza is a massive rock with two smaller rocks on either side. There is a small, rocky area that would probably be suitable for landing swimmers, but they would have extreme difficulty getting around the key. The team viewed this key from the boat and did not observe any OEW (see photo J-29 & plate 6).

(10) Los Gemelos consists of two separate keys about 100 feet apart. The larger one is a pile of rocks that would be difficult to get on and equally difficult to walk on. The smaller key is a tiny group of rocks that barely rises above the water line. The team viewed this site from the boat and did not observe any OEW (see photos J-30 & J-31 and plate 6).

(11) Cayo Botijuela is a tiny key northwest of Alcarraza and is not within the area of the topographic map. The team did not view this site (see plate 7).

**d. Area C: Naval Gunnery and Aerial Bombing**

(1) Piedra Stevens is a small key off the end of Flamenco Peninsula. The entire key is rugged rock. Access and walking will be extremely difficult. The team viewed this site from the boat and did not observe any OEW (see photo J-32 and plate 6).

(2) Carlos Rosario Beach is a popular boating area just north of Punta Tamarindo Grande. The team did not view this site (see plate 6).

(3) Flamenco Beach

(a) The Flamenco Beach area is easily accessible by road and is popular with tourists as well as locals (see photo J-33). Driving north from the airport, a right turn after the lagoon leads to the hotel and the privately-owned property. Going straight leads to the campground, where DNR has an office at the entrance (see photo J-34). The paved public road ends at the parking lot, though official vehicles are allowed to drive further on the unpaved road (see photo J-35). Proceeding north, one passes through the camping/picnic area (see photo J-36) where the ASR team operated the metal detector and detected buried metal objects. No OEW was observed in this area. The camping area ends south of the inland tank target (see photo J-37 and plate 6).

(b) The road continues through another cleared area, and the team observed some metal junk in the woods, possibly the remains of another tank or similar target. The team also observed some aluminum material that could be OEW components. Going further north leads to the beach tank target (see photo J-38). Walking north to a rocky area on the beach, the team found part of an 11.75" Tiny Tim aerial rocket (see photo J-39 and plate 6).

(4) Flamenco Peninsula

(a) Leaving the beach area, this road turns to the west heading into the wooded areas going uphill through DNR property. A four-wheel drive is recommended beyond this point; the team walked. The road winds up a moderate slope with heavy vegetation. On the edge of the road, the team observed an expended .50 caliber cartridge case, various fragments, and a large crater. A third tank target was visible from the road (see photo J-40). Over a mile from the beach, there is a gate that separates DNR property from FWS lands. FWS has put up a sign warning visitors of OEW dangers (see photos J-41 & J-42). Inside the FWS boundary, there is a 5" rocket embedded in the side of the hill (see photo J-43). Mr. Pena stated there is other OEW further down the road. While this road/trail is reasonably easy to walk, the rest of the peninsula is not. There is no level ground, and the hills are covered with dense vegetation and frequent boulders (see plate 6).

(b) The team also viewed Flamenco Peninsula from the water while going from Cayo de Luis Pena to Cayo Norte. Photos J-44 thru J-46 show the western side, including a bunkered spotting station. Photo J-47 shows the eastern side of the peninsula.

**e. Area D: Mortar Range**

This area is reached by heading north on the concrete road next to the former magazine at the Lower Camp. Mr. Pena showed us the firing point located next to the road (see photo J-48). No OEW was observed at the firing point. The targets were located on a hillside east of the firing point (see photos J-49 & J-50). To reach the impact area, a four-wheel drive is recommended. The impact area is now used for grazing, with a few trees, shrubs, and light grasses growing on the moderate slope (see photo J-51). The team found a mortar fragment in this area, possibly from a 3" Stokes (see photo J-52 and plate 7).

**f. Area E: Airfield Rifle Range**

Mr. Pena took the team to this area, which is across the runway from the terminal between the runway and a residential area. The team could not observe the old firing butts or any OEW because of the extremely dense vegetation (see photo J-53).

**g. Area F: Southern Rifle Range**

Residents of Culebra did not provide any information on this area, and the ASR team did not obtain the map and learn of

it's existence until after completion of the site visit (see plate 7). This area is hilly and wooded with scattered houses.

**h. Area G: Lower Camp**

This area is now the main offices of DNR and FWS and has the city's desalinization plant. DNR uses an empty 5" projectile as a door stop (see photo J-54). All of the original buildings are gone, though some frames and foundations still remain. The brick naval magazine built in 1905 is still standing (see photo J-55), but there is no evidence of the adjacent Marine magazine. Mr. Pena showed us other structures which he said were used for ammo storage in the 1930s, but there was no OEW found in or near any of these. This area also includes a dock, a seaplane ramp, and a helipad (see plate 8).

**i. Area H: Lower Camp Dump Sites**

These three former Navy trash dumps are on the east and west side of Lower Camp. The team did not observe any OEW (see plate 8 and photos J-56 & J-57).

**j. Area I: Cayo Matojo**

This is a small key located east of Punta Resaca and is relatively inaccessible. The team did not visit this area.

**k. Area J: Navy Gun Sites**

The team located one of these seven sites. It consisted of two concrete pads, about 8' x 10', with 16 1 1/2" bolts in the center of each pad (see photo J-58). These pads are about 100' apart. Between them is the remnants of a T-shaped, below-ground structure about 10'x20', with a 6' wide trench extending toward each pad (see photo J-59). The team did not observe any OEW at this site (see plate 7 for the location of all 7 gun sites).

**l. Area K: Mining West**

This area is in open water. The team did not observe any OEW while transiting this area.

**m. Area L: Marine Water Minefield**

This area is in open water. The team did not observe any OEW while transiting this area.

**n. Area M: Confirmed Water**

This is shallow water from Punta Tamarindo Grande southeast to Punta Melones. The team did not observe any OEW while transiting this area.

**o. Area N: All Other Water**

This area is all water not already included in other areas. The team did not observe any OEW while transiting this area.

**p. Area O: All Other Land**

This area is all land not covered in other areas. It includes the western half of Cayo Norte and most of Culebra. Military sites on Culebra include the airfield, the coaling station, the possible Army gun sites, the entire shoreline, the Marine guns positions shown on document L-10, and the "operations area" located east of the Flamenco Point OP (see photos J-60 & J-61).

**q. Area P: Flamenco Point OP**

This area is still owned by the Navy and is not eligible for consideration under DERP-FUDS (see photo J-65).

**7. EVALUATION OF ORDNANCE HAZARDS**

**a. General Procedures**

(1) Each subsite was evaluated to determine confirmed, potential, or uncontaminated ordnance presence. Confirmed ordnance contamination is based on verifiable historical evidence, direct witness of ordnance items, or reliable indirect witness. Verifiable historical record evidence consists of ordnance items located on site since site closure and documented by local bomb squads, military Explosive Ordnance Demolition (EOD) Teams, newspaper articles, correspondence, and current findings. Direct witness of ordnance items consists of the site inspection team directly locating ordnance items by visual inspection. For this report, reliable indirect witness includes the FWS refuge manager and a long-time local scuba instructor with former Navy ordnance experience. Additional field data is not needed to identify a confirmed site.

(2) Potential ordnance contamination is based on a lack of confirmed ordnance presence. Potential ordnance contamination is inferred from records or indirect witness. Inference from historical records would include common practice in range

operations at that time which could have allowed present day ordnance contamination. Potential ordnance contamination could also be based on indirect witness or from present day site features. Additional field data is needed to confirm potential ordnance subsites.

(3) Uncontaminated ordnance subsites are based on a lack of confirmed or potential ordnance evidence. There is no reasonable evidence, either direct or inferred, to suggest present day ordnance contamination. Additional field data is not needed to assess uncontaminated ordnance subsites. There are no uncontaminated areas in this report.

(4) Table 7-1 has been provided at the conclusion of this section to summarize OEW presence within all areas and subsites.

**b. Area A: Aerial Bombing and Rockets (East)**

(1) In general, this area has **confirmed** ordnance contamination, based on direct witness, reliable indirect witness, and historical records. Sub-sites within this area were used as aerial targets from the early 1960s until 1970 and as torpedo targets circa 1960. Those subsites not specifically documented as targets within this area are still within the 1.5 mile impact area as described in paragraph 4b(29), and exist as potentially contaminated sub-sites.

(2) Isla Culebrita was used as an OP, aircraft strafing range, and a torpedo target (see documents E-7 & K-7). It is entirely within the 1.5 mile impact area of Cayo Botella, and portions are within the impact area of Cayos Geniqui (see plate 2). Interviews and documents did not indicate inland target use other than the strafing range. It may have been used by the Marines in 1914 exercises (see document L-10). FWS staff and a local diver have **confirmed** OEW within this subsite (see plate 3).

(3) Culebrita's North Bay was used as a water strafing range (see documents I-8 & J-3), and is within the 1.5 mile impact areas for Cayo Botella and Cayos Geniqui. FWS staff and a local diver have **confirmed** OEW within this subsite (see plate 3).

(4) Cayo Botella was used as a target for aerial bombing and rockets (see documents E-7 & K-6). OEW has been **confirmed** by FWS and the local diver (see plate 3) as well as the ASR team (see photos J-6 thru J-8).

(5) Cayos Geniqui was used as a target for aerial bombing and rockets and torpedos (see documents E-7 & F-8). OEW

has been **confirmed** by EOD (see document F-10), FWS and the local diver (see plate 3), and the ASR team (see photo J-11).

(6) Cayo Tiburon was used as a target for aerial bombing and rockets (see document E-7). OEW has been **confirmed** by FWS and the local diver (see plate 3).

(7) Cayo Ballena's former usage is unknown. It is less than 1000' from Cayo Tiburon and also within the 1.5 mile impact areas of Cayos Geniqui and Cayo Botella. OEW has been **confirmed** by EOD (see document F-10) and the local diver (see plate 3).

(8) Cayo Sombrerito's former usage is unknown. It is within the 1.5 mile impact areas of Cayo Botella, Cayos Geniqui, and Cayo Tiburon. OEW has been **confirmed** by a local diver (see plate 3).

(9) Cayo Norte may have been used as a run-in line to Cayo Botella, though there is no line visible on 1985 aerial photos (ref B-15, see photo K-13). It also may have been used by the Marines in the 1914 exercises (see document L-10). Interviews and documents did not indicate use as a target nor any OEW found on the key. The eastern half is within the 1.5 mile impact area for Cayo Tiburon, Cayo Botella, and Cayos Geniqui. OEW has been **confirmed** off the eastern shore by a local diver (see plate 3).

(10) The eastern corner of Culebra lies within the 1.5 mile impact area of Cayo Botella and is less than a mile from the Culebrita strafing targets. The Marines may have used this area in 1914 exercises (see document L-10). Interviews and documents did not indicate use as a target. However, on June 18, 1969, residents observed a Marine aircraft firing near their beach and later recovered a 20mm practice projectile (ref B-18 and table 4-2). This one incident **confirms** the presence of OEW within this subsite.

#### c. Area B: Aerial Bombing and Rockets (West)

(1) As a whole, this area has **confirmed** ordnance contamination, based on direct witness, reliable indirect witness, and historical records. Sub-sites within this area were used as aerial targets from about 1960 until 1975. In addition, most of this area is downrange from the Flamenco Peninsula, which was used for Naval gunnery and aerial bombing from about 1935 until 1975.

(2) Cayo de Luis Pena was used as an OP and radar site (see document E-7). It was also a run-in line to the aerial target on Cayo del Agua (see photo K-10). Also, it may have been

used by the Marines in 1914 exercises (see document L-10). It is within the 1.5 mile impact area for Cayo del Agua. Interviews and documents did not indicate use as a target, though the bay to the east is known as Target Bay. There were three documented incidents when it was struck by errant naval gunfire directed at Flamenco Peninsula (see table 4-2). This subsite is considered as **potentially** contaminated.

(3) The former usage of North Bay of Luis Pena is unknown. It is within the 1.5 mile impact area for Cayo del Agua and the 1.7 mile naval gunnery impact area for Flamenco Peninsula. FWS, a local diver, and a transient boater have **confirmed** OEW in the water (see plate 3). In addition, the ASR team observed underwater objects which may have been OEW (see photo J-19).

(4) Cayo del Agua was used for aerial bombing and rockets (see documenta E-7 & K-8). OEW has been **confirmed** by FWS and a local diver (see plate 3) as well as the ASR team (see photo J-22).

(5) Cayo Yerba's former usage is unknown. It is within the 1.5 mile impact area of Cayo del Agua. OEW was **confirmed** by FWS and the diver (see plate 3).

(6) Cayo Raton's former usage is unknown. It is 2000' from the impact area of Cayo del Agua. OEW was **confirmed** by FWS and a local diver (see plate 3).

(7) Former usage of El Mono is unknown. It is less than a mile from the impact area at Cayo Lobo. A local diver **confirmed** OEW in this subsite (see plate 3).

(8) Cayo Lobo was used for aerial bombing and rockets (see document E-7). Items dropped in 1974 for the Babcock electronic scoring system included the 2.75" rocket and the MK 76 and Mk 106 practice bombs. It is not known if live bombs were used previously. A 1934 Marine letter mentioned Cayo Lobo as a tentative site for experimental naval gunfire (see document F-3). OEW was **confirmed** in the subsite by FWS and a local diver (see plate 3).

(9) Cayo Lobito had a flight line approach marker for Los Gemelos. It is within the 1.5 mile impact area for Cayo Lobo. Interviews and documents did not indicate use as a target. OEW was **confirmed** in this subsite by FWS and a local diver (see plate 3).

(10) Alcarraza was used for aerial bombing and rockets, high and low-level radar bombing, special weapons exercises (loft

and over-the-shoulder bombing), B-52 high level radar drops, and Mk 83 1000 pound bombs (see document E-7). OEW was **confirmed** in this subsite by FWS and a local diver (see plate 3).

(11) Los Gemelos was used for aerial bombing and rockets, high and low-level radar bombing, special weapons exercises (loft and over-the-shoulder bombing), and air-to-ground missiles, including the Bullpup with inert warheads (see document E-7). OEW was **confirmed** in this subsite by the diver (see plate 3).

(12) Cayo Botijuela's former usage is unknown. It is less than a mile from Alcarraza and within the 1.5 mile impact area. OEW was **confirmed** in this subsite by a local diver (see plate 3).

#### d. Area C: Naval Gunnery and Aerial Bombs and Rockets

(1) Overall, this area has **confirmed** ordnance contamination, based on direct witness, reliable indirect witness, and historical records. Sub-sites within this area were used as aerial and naval gunnery targets from 1935 until 1975, with known targets located on the eastern (bay) side of the peninsula. This was the only area with documented use by naval gunfire (see document E-7).

(2) Parts of the Flamenco Peninsula were used for aerial bombing, rockets, and strafing as well as naval gunnery, though aerial use ended in 1969 (see photos K-3, K-9, & K-12). Firing was directed from the Flamenco Point OP (see document E-7). The Marines also used the peninsula for training from 1903 to 1941, and it is likely they fired weapons there (refs B-97, B-98, & B-124). OEW was **confirmed** by FWS and a local diver (see plate 3) and the ASR team (see photo J-43).

(3) Former usage of Piedra Stevens is unknown. It is within the 1.7 mile naval gunnery impact area of Flamenco Peninsula as well as the 1.5 mile aerial bombing impact areas of Alcarraza and Los Gemelos. OEW was **confirmed** in this subsite by a local diver (see plate 3).

(4) Former usage of the Carlos Rosario Beach site is unknown. It is within the 1.7 mile impact area of the Flamenco Peninsula, all of which was owned by the Navy and used for aerial and naval gunnery. It is also within the 1.5 mile impact area of Cayo del Agua. OEW was **confirmed** in this subsite by FWS and a local diver (see plate 3).

(5) Flamenco Beach is on the southern edge of the property that was owned by the Navy and the two tanks were among

the targets used (see photos J-37, J-38, & K-11). The private beach property and lagoon to the east were outside of the Navy-owned property and apparently not targets. However, they fall within the 1.7 mile impact area for naval gunfire and aerial bombing. OEW was **confirmed** by the diver (see plate 2) and the ASR team (see photo J-39).

**e. Area D: Mortar Range**

This area is considered **confirmed** based on mortar fragments found by the ASR team (see photo J-52). This determination is also based on the interview of a local resident who described its use as an artillery range in the 1930s. There is no documentation on this range. The one known civilian fatality took place around 1935 when a boy died while playing with a dud found on this range (see document I-6).

**f. Area E: Airfield Rifle Range**

(1) A 1902 sketch shows a trail from Lower Camp going west to the "target range", which may be this site. More specific usage is based on a 1913 Marine map which shows "old rifle range" in this location (see document L-10) and later maps which in 1944 show "brick walls" (see document L-3) and in 1947 "ruins of brick walls" (see document L-4). A 1938 photo shows evidence of brick walls (see document K-14), and a 1968 photo shows what could be remnants of these walls (see photo K-3). A long-time resident described how in the 1920s & 1930s the soldiers used to fire rifles and pistols at targets that moved up and down (see document I-6). A much younger resident told of finding live bullets (in clips) near the airport (see document I-4).

(2) Historical records indicate that the airfield was built circa 1920. After that date, it is unlikely the Marines used explosive items (e.g. hand or rifle grenades) on this range. Fragments produced by these items could have damaged aircraft, punctured tires, or ignited fuel stores. In addition, a 1934 Marine letter requested an area in tract 91 (Flamenco Peninsula) for actual firing of infantry and light artillery weapons (see document F-2). The use of ordnance other than small arms (which is not considered OEW if expended) appears unlikely after 1920. However, earlier contamination cannot be ruled out, and it lies just outside of the 1.7 mile impact area for Flamenco Peninsula. This area is considered as **potential**.

**g. Area F: Southern Peninsula Rifle Range**

OEW contamination for this area is **potential**. The only reference for this area is the 1913 Marine map which shows "old

rifle range" on the end of the peninsula southeast of Culebra City, near the old coaling station (see document L-10). The use of ordnance other than small arms (which is not considered OEW if expended) cannot be ruled out. It is also possible that a stray bomb from area A or B could have landed here.

**h. Area G: Lower Camp**

This area is considered **potential**. It was used by the Navy and Marines beginning about 1905, and there were two structures used as magazines (see documents L-1 & L-2). The team did not find any OEW near these structures or anywhere else in the camp. DNR employees were not aware of any OEW burial sites, and no OEW has been reported there. However, since the site history goes back 90 years, the possibility of buried OEW exists anywhere on the camp. The camp is over a mile from any of the area A and B impact areas, but a stray round could have landed there (see plate 8).

**i. Area H: Lower Camp Dumps**

This area is considered **potential**. Two dumps (east and west) were used by the Navy when they closed the base. A third (southeast) shows in a 1943 aerial photo (see document K-16) and was excavated by FWS archeologists in 1992, and they found a fired bullet casing. DNR employees were not aware of OEW dumped at any of these sites. However, since DoD usage dates back to 1902, it is possible all three dumps were used for OEW. If there is buried OEW at the Lower Camp, the most likely location is in these dumps. The INPR identified the western dump as a potential HTRW site. This ASR also recommended the eastern and southeastern dumps as potential HTRW sites (see plate 8).

**j. Area I: Cayo Matojo**

This area is considered **potential**. The only source for information is a second-hand report from a transient FWS employee who though he saw OEW. This key is 1 1/2 miles east of Flamenco Point, in an area where no one has ever reported finding OEW. It is possible that a stray bomb, projectile, mine, or torpedo could have landed here, as has been documented in other instances (see table 4-2 and plate 4).

**k. Area J: Navy Gun Sites**

These sites are considered **potential** because of their likely former usage as coastal defense sites (see documents L-5 & L-7). The quitclaim deed to DNR refers to these as having mounts for 6-pounder, 4", and 5" guns (see document G-2). The site the team visited had what appeared to be two concrete gun mounts with

a trench in between. The owner reported finding military artifacts but no OEW and said that "1906" was marked on the trench wall (see document I-11). There is no proof that guns were actually emplaced on these sites nor any indication that OEW was buried, but the possibility exists. It is also possible that a stray round landed here, or that the Marines used these sites for training.

#### l. Area K: Mining West

This area is considered **potential** because of its former usage as a training area for mines dropped from aircraft between 1967 and 1969 (see documents E-7 and L-12). These were probably not HE mines, but drill mines containing signal flares and/or small buoys. The size of area K is based on the safety zone shown in document E-6. This area is in the same general location as the underwater brass dump HTRW project (see plate 4).

#### m. Area L: Marine Water Minefields

This area is considered **potential**. The locations of these minefields were obtained from a 1913 Marine map planning for a major exercise (see document L-10). There is no information that these mines were all actually emplaced, though other references describe mine-laying and mine-sweeping trials during this exercise. There was no information on whether they used live HE mines, practice mines with a small TNT charge, or inert shapes. Documents indicate that underwater mine training took place as early as 1903, but specific locations are unknown.

#### n. Area M: Confirmed Water

(1) This area is considered **confirmed** based on the interview of a local diver (see document I-9 & plate 3). He reported seeing OEW in the shallow areas of western Culebra Island between Punta Tamarindo and Punta Melones. There is no documented impact area here, and this OEW could be rounds fired at Flamenco Peninsula that overshot. The fact that the 1913 Marine map calls this area "Target Bay" (as does the current NOAA chart) does raise questions (see documents L-8 and L-10).

(2) This same diver also **confirmed** OEW in small areas south of Culebra City off Playa Sardinias. These items could be stray projectiles or bombs from areas B and C, or they could be mines from areas K or L. One source said Punta del Soldado had been used as a target for practice bombs in the early 1940s (see document I-1). This use of Punta Soldado was not confirmed in any other interviews or documents.

**o. Area N: All Other Water**

(1) This area is considered **potential**. Although the diver has not observed any OEW in this area, it is quite possible there is OEW buried in the sands. As shown in table 4-2, bombs or projectiles have been known to miss the target. With 80 years of known ordnance usage, there is a strong likelihood that additional bombs, rockets, projectiles, mines, or torpedos landed outside of their impact area.

(2) Included in this area is the water where coastal artillery may have been fired. The Army planned to emplace two 6" guns on Dolphin Head and Flamenco Peninsula. The Navy had 7 gun sites on southern Culebra that may have had 6 pounders, 4", and 5" guns (see document L-5). In addition, the 1913 Marine map (document L-10) shows firing arcs for numerous 3" and 5" guns that may or may not have been emplaced. If any of these guns actually existed, it is likely that they did practice firing out toward open water, using HE or practice rounds.

**p. Area O: All Other Land**

(1) This area is considered **potential**. Although there is no information to confirm ordnance on this area, there is enough information not to call it uncontaminated. As shown in table 4-2, bombs or projectiles have been known to miss the target. With 80 years of known ordnance usage, there is a strong likelihood that additional bombs, rockets, projectiles, mines, or torpedos landed way out of the impact area in areas that were not owned by the Navy.

(2) Historical records show there was almost constant Marine training from 1903 until 1940, but except for the two rifle ranges (areas E & F), these records are not clear in confirming specific locations of ordnance usage. The Navy owned the entire shoreline of Culebra Island, and it is likely the Marines used most of it to practice amphibious landings. The mortar range (area D) does not appear anywhere in historic records, although a 1925 property map implies that the Navy leased property in that general area (see document L-9). This map describes some of the property as "...supposedly belonging to the Navy Department", implying that their records weren't precise. It is possible that there are other Marine ranges that remain undiscovered.

(3) Specific military sites in this area include the Army gun site on Dolphin Head, the Marine gun sites and mine casemates shown in document L-10, the operations area located east of Flamenco Point (see documents L-6 & L-7), the airfield, and the coaling station. One non-military site is the downtown

residence with an ordnance display in her yard. The only part of area O not on Culebra Island is the western half of Cayo Norte.

**q. Area P: Flamenco Point OP**

This area is not eligible for consideration under DERP-FUDS. It is mentioned and a photo is included only because it was the central range control center.

**r.** Table 7-1 summarizes the OEW presence within each area and subsite.

**TABLE 7-1  
OEW PRESENCE**

Area & subsite	Confirmed	Potential	Comments
<b>A-1</b> Isla Culebrita	FWS & local diver	-	Large key with varied terrain. North beach is popular with boaters.
<b>A-2</b> Culebrita North Bay	FWS & local diver	-	Clear, shallow water. Popular with boaters.
<b>A-3</b> Cayo Botella	FWS, local diver, EOD, ASR team	-	Accessible w/light vegetation.
<b>A-4</b> Cayos Geniqui	FWS, local diver, EOD, ASR team	-	Two separate keys. One rugged and inaccessible. Other is accessible though rugged.
<b>A-5</b> Cayo Tiburon	FWS & local diver	-	Inaccessible and rugged.
<b>A-6</b> Cayo Ballena	EOD & local diver	-	Inaccessible and rugged.
<b>A-7</b> Cayo Sombrerito	Local diver	-	Inaccessible and rugged.
<b>A-8</b> Cayo Norte (eastern half)	Local diver (water)	-	Large key w/varied terrain. Privately owned by a part-time resident.
<b>A-9</b> Culebra Island (eastern segment)	One stray practice 20mm (table 4-2)	Within 1.5 mi of Cayo Botella and Culebrita	Eastern edge of Culebra. Varied terrain.
<b>B-1</b> Cayo de Luis Pena	-	Hit by long rounds 3x (table 4-2)	Large key w/varied terrain. Beaches are popular with boaters.
<b>B-2</b> North Bay, Cayo de Luis Pena	FWS & local diver	-	Clear, shallow water. Popular with boaters.
<b>B-3</b> Cayo del Agua	FWS, local diver, & ASR team	-	Accessible with light vegetation.

**TABLE 7-1  
OEW PRESENCE**

Area & subsite	Confirmed	Potential	Comments
<b>B-4</b> Cayo Yerba	FWS & local diver	-	Inaccessible and rugged.
<b>B-5</b> Cayo Raton	FWS & local diver	-	Inaccessible and rugged.
<b>B-6</b> El Mono	Local diver	-	Inaccessible, tiny, & rugged.
<b>B-7</b> Cayo Lobo	FWS & local diver	-	Accessible w/large grassy target area and rugged coast.
<b>B-8</b> Cayo Lobito	FWS & local diver	-	Inaccessible with rugged shore and grassy hilltop.
<b>B-9</b> Alcarraza	FWS & local diver	-	Inaccessible, extremely rugged.
<b>B-10</b> Los Gemelos	Local diver	-	Two keys: One small, one tiny. Both inaccessible and rugged.
<b>B-11</b> Cayo Botijuela	Local diver	-	Inaccessible and rugged.
<b>C-1</b> Flamenco Peninsula	FWS, local diver, & ASR team	-	Large peninsula w/varied terrain. Hills w/dense vegetation and some rugged coast. Some popular beaches.
<b>C-2</b> Flamenco Beach (Note: A three acre site on part of this beach is an interim removal project.)	Diver and ASR team	-	Accessible, popular beaches.
<b>C-3</b> Carlos Rosario Beach	FWS & local diver	-	Accessible and popular with boaters.
<b>C-4</b> Piedra Stevens	Local diver	-	Inaccessible and rugged.
<b>D</b> Mortar range	ASR team	-	Remote grazeland, hilly.
<b>E</b> Airfield rifle range	-	Based on maps and interviews.	Dense vegetation. Adjacent to airport and housing area.

**TABLE 7-1  
OEW PRESENCE**

Area & subsite	Confirmed	Potential	Comments
<b>F</b> Southern rifle range	-	Based on a 1913 map.	Dense vegetation, scattered houses.
<b>G</b> Lower Camp	-	Had two magazines, goes back to 1902.	Light to moderate vegetation. Used as DNR & FWS headquarters.
<b>H</b> Lower Camp dumps	-	Three known dumping areas.	Same as area G.
<b>I</b> Cayo Matojo	-	Second-hand report from FWS.	Inaccessible and rugged. Not near any impact area.
<b>J</b> Navy Gun sites (7)	-	Likely sites of 6 lb, 4" & 5" guns.	7 separate sites. One near a house, others all over Southern Culebra.
<b>K</b> Mining west	-	Used as aerial mining range.	Open water. Above a potential HTRW site (brass dump).
<b>L</b> Marine water minefield	-	Based on 1913 map and other documentation.	Primarily open water.
<b>M</b> Confirmed water	Local diver	-	Shallow coastal water.
<b>N</b> All other water	-	Possible contamination	Mostly north and south of Culebra.
<b>O</b> All other land	-	Possible contamination	On Culebra and Cayo Norte.
<b>P</b> Flamenco Point OP	still Navy-owned,	not FUDS-eligible,	not evaluated

8. SITE ORDNANCE TECHNICAL DATA

a. **End Item Technical Data**

(1) Historical records show that the Marines carried and fired numerous types of weapons on Culebra between 1901 and 1941. The only mention of CWM is during a 1924 exercise which included gas troops. Table 8-1 provides a listing of Marine weapons specifically mentioned in references. These items may not be found on Culebra, and items not listed may be found. Drawings of some of these rounds may be found in appendix D.

TABLE 8-1 USMC WEAPONS/ORDNANCE		
Type	Typical charge	Filler
Small arms up to .50 cal	Ball, blank, armor-piercing	Solid
75mm pack howitzer, 3"/50 & 5"/40 guns, 81mm mortar, 155mm howitzer	HE WP Smoke Practice	TNT or other White phosphorous Smoke mixture Sand or solid
Mine, contact or dormant controlled	HE Practice	TNT or other Sand

(2) Records indicate that the Army and the Navy may have installed fixed coastal defense weapons on Culebra. Table 8-2 provides a listing only of the specific coastal weapons mentioned in historic references. These items may not be found on Culebra, and items not listed may be found. Drawings of some of these rounds may be found in appendix D.

TABLE 8-2 COASTAL DEFENSE WEAPONS		
Type	Typical charge	Filler
<b>Army:</b> 6"	HE AP Practice	TNT or other Explosive D Solid or sand
<b>Navy:</b> 4", 5", 6 pounder	HE AP Practice	TNT or other Explosive D Solid or sand

(3) Navy records confirm that live and drill torpedos were fired at Cayos Geniqui and at Culebrita. Table 8-3 provides a listing of torpedos from a 1959 letter and EOD reports. All these items may not be found on Culebra, and items not listed may be found. Drawings of some of these rounds may be found in appendix D.

TABLE 8-3 SUBMARINE-LAUNCHED TORPEDOS		
Model	Range, yards	Warhead, HE
MK 14-3A	9,000	643 lbs
MK 16-6, -7	11,000	746 lbs
MK 27-4	5,000	95 lbs
MK 28-3	4,000	585 lbs
MK 15	unknown	drill

(4) Navy records confirm that numerous types of weapons were fired in surface gunnery practice over a 40 year period, including weapons from foreign ships. A 1972 report estimated that 750,000 rounds had been fired at the Flamenco Peninsula. Table 8-4 provides a listing of items specified in Navy documents, primarily for 1969. These items are likely to be found in and around Culebra, and items not listed may also be found. Drawings of some of these rounds may be found in appendix D.

TABLE 8-4 SURFACE GUNNERY ORDNANCE		
Type	Typical charge	Filler
40mm gun, 81mm mortar,	HE	TNT or other
3"/50, 5"/38, 5"/54,	WP	White phosphorous
6"/47, 8"/55, "up to	HC (high capacity)	Expl D or other
and including 16"/50"	HC (smoke)	Smoke mixture
	AP	Explosive D
	Illuminating	Magnesium
	Practice	Solid

(5) Navy records confirm extensive aerial weapons training over a 40 year period, with use by Marine, Navy, Air Force (B-52s), Air National Guard (F-104 & T-28), and Royal Air Force (UK) aircraft. A 1972 report estimated that 320,000 units of aerial ordnance were delivered on the Culebra ranges. Table 8-5 provides a listing of items specified in Navy documents, primarily for 1969. Items not listed are likely to be found as well. Drawings of some of the items may be found in appendix D.

**TABLE 8-5  
AERIAL ORDNANCE**

Type	Typical charge	Filler
Cartridge, 20mm	HE	RDX or tetryl
	HEI	RDX & incendiary mix
	Practice	Inert
Rocket, 2.75" FFAR	HE	HBX or other
	WP	White phosphorous
	Practice	Inert
Flares, parachute, Mk 44 & Mk 45	Illuminating charge	Pyrotechnic composition
Practice bombs, Mk 76 & Mk 106	Smoke signal Mk 4 or CXU-3	Titanium tetrachloride
Bomb GP, Mk 82/83	190/445 lbs HE	Tritonal, TNT, Comp B, or Amatol
Bomb, 2000 lb, practice	None or spotting charge	Inert or titanium tetrachloride
Bombs, 28 to 1000 lb (UK)	Unknown	Unknown
Rocket, 2" (UK)	Unknown	Unknown
Bullpup missile (AGM-12)	Live motor, inert warhead	Inert
Mine, aerial	Drill	Signal flare

(6) Although the team was unable to locate range clearance records, there were documents found that verified the presence of certain munitions. Table 8-6 is a listing of items documented by EOD reports as well as OEW viewed by the ASR team.

TABLE 8-6 ORDNANCE VERIFIED		
Item	Location	Comments
<b>EOD:</b>		
Expended Mk76 & 106	Cayo Botella	Surface, 16 Mar 73
Mk 27 HE torpedo	E of Cayos Geniqui	Water, 19 Jan 83
2 500 lb HE bombs	W of Cayos Geniqui	Water, 19 Jan 83
500 lb HE bomb	W of Cayo Ballena	Water, 19 Jan 83
<b>ASR Team:</b>		
.50 cal brass	Flamenco Peninsula	On hillside trail
Mortar fragments, possibly 3" Stokes	Mortar range	See photo J-52 18° 18' 58" N 65° 16' 8" W
5" & 6" projectiles Mk 76, 81mm fins	Residence in downtown Culebra	See photos J-62 thru J-64
5" projectile	DNR headquarters	See photo J-54
5" rocket	Flamenco Peninsula	See photo J-43 18° 20' 22" N 65° 20' 5" W
11.75" Tiny Tim aerial rocket	Flamenco Beach	See photo J-39 18° 20' 10" N 65° 19' 28" W
Mk 76, Mk 106, HE bomb frags & fins, Mk 80 series bomb	Cayo Botella	Water and surface see photos J-6 thru J-8
Mk 76, bomb frags	Cayo del Agua	See photo J-22
Mk 14/15 fin	Cayos Geniqui	See photo J-11

## b. Chemical Data of Ordnance Fillers

Because of the extremely wide variety of munitions used in and around Culebra, a complete listing of fillers would be impractical. It is likely that nearly every type of non-nuclear filler in the Navy inventory was used at Culebra. Table 8-7 provides a partial list of common fillers.

**TABLE 8-7**  
**CHEMICAL DATA OF ORDNANCE FILLERS**

Energetic Material	Synonyms	Chemical Compounds
TNT	2,4,6-trinitrotoluene	$C_7H_5(NO_2)_3$
Explosive D (Ammonium Picrate)	Ammonium 2,4,6-trinitrophenolate	$C_6H_2(NO_2)_3NOH_4$
Amatol 50/50 50% TNT 50% Ammonium Nitrate	See above AN	See above $NH_4NO_3$
Composition B 60% RDX 39% TNT 1% wax	Cyclotrimethylene-trinitramine See above	$C_3H_6N_3(NO_2)_3$ See above
Picratol 52% Ammonium Picrate 48% TNT	Ammonium 2,4,6-trinitrophenolate See above	$C_6H_2(NO_2)_3NOH_4$ See above
Tritonal 80% TNT 20% flaked aluminum	See above	See above Al
RDX	Cyclotrimethylene-trinitramine	$C_3H_6N_3(NO_2)_3$
Tetryl	2,4,6-Trinitrophenyl-methylnitramine	$C_6H_2(NO_2)_3N NO_2CH_3$
HC	Hexachloroethane	Zn + $C_2Cl_6$
WP	White phosphorous	P
Napalm	Napthenic palmitic	

## 9. OTHER ENVIRONMENTAL HAZARDS

### a. **Hazardous, Toxic, and Radiological Waste**

(1) The INPR recommended an HTRW project on the west side of the Lower Camp. There are two additional Navy dumps on the east and southeast sides which should also be considered as HTRW projects (see plate 8 and photos J-56, J-57, & K-16). In addition, a 1953 map (document L-2) shows a 3000 gallon gasoline tank (no. 37, location E-5) and a 500 gallon tank (no. 51, location D-3) at the camp. These tanks also appear on a 1950 map (ref B-82). The ASR team was not aware of these tanks during the site visit and did not verify their presence. They should be considered for a potential CON/HTRW project (see plate 8).

(2) Real estate documents indicate that the Navy modified the old Culebrita lighthouse into an OP in 1965 (see photo K-7). Improvements included a helicopter pad, aircraft beacon, optical landing system, electric power plant, stand-by generator plant, fuel storage and septic tanks, and a sanitary sewer line (refs B-10 & B-66). The ASR team did not visit the OP area to verify their presence, but these facilities appear to be on the four-acre site that now belongs to the Coast Guard. Ms. Tallevast of Fish & Wildlife (who own the remainder of Culebrita) was unaware of any HTRW problems from this site but could not confirm that the tanks had been removed. This should be considered for a potential CON/HTRW project (see plate 5).

(3) There was also an OP constructed at Cayo de Luis Pena (see photo K-10). Real estate documents show that the Navy had an observation building, storage building, microwave building, generator building, four radar vans, Nike-Ajax radar, a house trailer, sanitary sewer, and fuel and water storage tanks (refs B-54 & B-60). The ASR team did not visit the OP area. Ms. Tallevast of Fish & Wildlife (who own the entire island) was unaware of any HTRW problems but could not confirm the tanks had been removed. This should be considered for a potential CON/HTRW project (see plate 6).

(4) The Navy had a spotting station located at Duck Point on the eastern side of Culebra. Real estate records indicate the Navy constructed an observation shelter, helipad, toilet, and generator shed (ref B-47). There is no mention of fuel storage tanks, but any generator would need fuel. The ASR team did not visit this site. There is a possibility there are tanks at this site, and it should be considered for a potential CON/HTRW project (see plate 5).

(5) An experienced scuba diver reported there is an underwater dump southeast of Cayo de Luis Pena (see plate 6 and document I-9). He reported that there are large quantities of expended cartridge cases (brass) there. If the Navy used this area as a dump for brass, it is possible they also dumped other material, and the area should be considered for a potential HTRW project in addition to the OEW considerations. This dump is in the same general area as the Mining West range (area K).

(6) Although the abandoned Flamenco Point OP is still owned by the Navy and not FUDS-eligible, documents indicate that the Navy had facilities outside of this 87 acre site (refs B-54 & B-59). One map shows a generator/transformer station and also a gasoline tank just south of the former OP on FUDS-eligible property. The ASR team drove by this site but did not notice if transformers or the gas tank were still present. There is a possibility the tank and transformers remain, and this site should be considered as a potential CON/HTRW project (see plate 6). Table 9-1 summarizes all the potential HTRW projects.

#### **b. Building Demolition/Debris Removal**

Most of the permanent construction was at the Lower Camp, Area. Some of the remaining structures are in poor condition, but they do not appear to pose a hazard. The ASR team did observe about 6 heavy metal poles in the water west of Culebrita, which were used to support strafing targets (see photo J-3 and plate 5). The poles protrude 1' out of the water and are not marked on navigational charts. It is recommended that these poles be considered for a BD/DR project, as their existence presents a hazard to small craft. This information is summarized in table 9-1.

**TABLE 9-1**  
**POTENTIAL HTRW & BD/DR CONSIDERATIONS**

LOCATION	SI/Classification	COMMENTS
Lower Camp	Southeastern and eastern dumps (C) HTRW	See photos J-56 & K-16, doc L-2, and plate 8
Lower Camp	Fuel tanks (P) CON/HTRW	See doc L-2, plate 8
Culebrita OP	Fuel tanks (P) CON/HTRW	See plate 5 & photo K-7 (USCG property)
Luis Pena OP	Fuel tanks (P) CON/HTRW	See plate 6 & photo K-10
Duck Point Spotting Station	Fuel tanks (P) CON/HTRW	See plate 5
SE of Luis Pena	Brass dump (C) HTRW	See plate 4, doc I-9
Flamenco Point OP generator site	Gasoline tank (P) transformers (P) CON/HTRW	See plate 6 (on FUDS eligible property)
Culebrita Beach	Metal poles (C) BD/DR	See plate 5 & photo J-3
(C): Existence Confirmed      (P): Existence Potential		

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX A

REFERENCE SOURCES

**REFERENCE SOURCES**

The following organizations and personnel are acknowledged for their support.

Organization	Name	Telephone	Nature of Support
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**GOVERNMENT SOURCES**

**FEDERAL AGENCIES**

**Department of Defense**

**Headquarters**

Defense Libraries On Disk Washington, DC 20319	Ms. Judy Skupien	(703) 697-4658	No information
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Defense Logistics Studies Info Exchange Ft Lee, VA 23801	Ms. Jacqueline Bey	(804) 734-4007	No information
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DDESB Database USATCES, SMCAC-ESM Savanna, IL 61074	Mr. Robert Carr	(703) 325-8624	No information
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**U.S. Army**

US Army Corps of Engineers, Huntsville Division, CEHND-ED-SY PO Box 1600 Huntsville, AL 35807	Mr. Wayne Galloway	(205) 255-4265	Photographs, maps, & OEW information
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US Army Corps of Engineers, Jacksonville District ATTN: CESAJ-DP-S PO Box 4970 Jacksonville, FL 32232	Mr. Robert Bridgers Mr. Ivan Acosta	(904) 232-3085	Photographs, maps, & documents
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**REFERENCE SOURCES (continued)**

Organization	Name	Telephone	Nature of Support
<b>FEDERAL AGENCIES (continued)</b>			
<b>Department of Defense (continued)</b>			
<b>U.S. Army (continued)</b>			
US Army Corps of Engineers, Antilles Office 400 Fernandez Juncos San Juan, PR 00901	Mr. Yamile Castillo Ms. Elsa Martinez Mr. Luis Molero	(809) 729-6880	Property data, PR support, & translation service
US Army Corps of Engineers Office of History Alexandria, VA 22310	Dr. Martin Gordon	(703) 355-3558	Historical information
13th EOD Det Ft Gillem, GA 30050	SFC Stargardt	(404) 363-5953	No information
Puerto Rico Army National Guard PO Box 3786 San Juan, PR 00902	Ms. Carmen Colberg	DSN 860-9210	Referral
AMCCOM Historical Office Rock Island, IL 61299	Dr. Herb LaPore	(309) 782-1450	No information

**RERERENCE SOURCES (continued)**

Organization	Name	Telephone	Nature of Support
<b>FEDERAL AGENCIES (continued)</b>			
<b>Department of Defense (continued)</b>			
<b>US Army (continued)</b>			
Rock Island Arsenal Museum Rock Island, IL 61299	Ms. Chris Leinicke	(309) 782-5021	Technical manuals
Army Safety Mgmt Info System Ft Rucker, AL 36322	Ms. Cindy Ballard	(205) 255-6485	No information
Center for Military History, DAMH-RAS 1099 14th St NW Washington, DC 20536	Ms. Hannah Zeidlak	(202) 504-5416	No information
Army Chemical and Biological Command Aberdeen Proving Ground, MD 21010	Ms. Kathy Ciolfo	(410) 671-4430	No evidence of CWM activity
<b>US Air Force</b>			
Air Weather Service National Climatic Data Center Asheville, NC 28801	Ms. Janet Wall	(704) 271-4218	Climatological data
156th Fighter Wing PO Box 3786 San Juan, PR 00902	CPT Morales	(809) 253-5158	Referral

**REFERENCE SOURCES (continued)**

Organization	Name	Telephone	Nature of Support
<b>FEDERAL AGENCIES (continued)</b>			
<b>Department of Defense (continued)</b>			
<b>US Navy</b>			
US Naval Institute 118 Maryland Ave Annapolis, MD 21402	Ms. Ann Hassinger	(410) 268-6110	Magazine articles
Station Library Bldg 66 Mayport NS, FL 32238	Mr. Harvey Palmer	(904) 270-5393	Historical data
Naval Construction Bn Code 10H Port Hueneme, CA 93043	Mr. Vince Transano	(805) 982-5913	No information
NAVFACENGCOM Code 242EJ 1510 Gilbert St Norfolk, VA 23511	Mr. Gene Jicha Ms. Pam Andersen Ms. Sandy Franz Mr. Emory Nichols	(804) 445-2373	Real estate information
NAVFACENGCOM HQ EPB, Arlantic Div Norfolk, VA 23511	Mr. Paul Rudkowski Ms. Laurie Baucher	(804) 322-4790	Referral
Naval Historical Ctr Washington Navy Yard Washington, DC 20374	Mr. Bernard Cavalcante	(202) 433-3171	Historical data
Station Library PSC 1008, Box 3030 FPO AA 34051	Mr. Hector Ruiz	(809) 865-4353	Newspaper articles

**REFERENCE SOURCES (continued)**

Organization	Name	Telephone	Nature of Support
<b>FEDERAL AGENCIES (continued)</b>			
<b>Department of Defense (continued)</b>			
<b>US Navy (continued)</b>			
USNS Roosevelt Roads Code: NO2C-B24 PSC 1008, Box 3021 FPO AA 34051	Mr. Cesario Nieves Ms. Carmen Perea	(809) 865-3048	Real estate information
AFWTF, Code 34 PSC 1008, Box 323 FPO AA 34051	Mr. Ken DeAngelo	(809) 865-5231	Historical range information
Meteorology Detachment PSC 1008, Box 84 FPO AA 34051	PO1 Abreu	(809) 865-4017	Weather data
EOD Group II RR Det PSC 1008 Box 3635 FPO AA 34051	BMC Perkins Chief Enders	(809) 865-4316	Referral
US Marine Corps Historical Center Washington Navy Yard Washington, DC 20374	Ms. Lisa Wagner	(202) 433-3171	Historical information
US Marine Corps Reserve Center Rock Island Arsenal Rock Island, IL 61299	First Sergeant Hill	(309) 782-6045	Historical information

**REFERENCE SOURCES (continued)**

Organization	Name	Telephone	Nature of Support
<b>FEDERAL AGENCIES (continued)</b>			
<b>Department of the Interior</b>			
<b>US Geological Survey</b>			
Map Distribution Ctr Box 25286 Denver, CO 80225	Staff	(303) 236-7477	Topographical map
Marine Geology Div PO Box 5917 Puerta de Tierra Sta. San Juan, PR 00906	Mr. Rafael Rodriguez Mr. John Parks	(809) 729-6934 749-4430	Underwater mapping information
<b>Fish &amp; Wildlife Service</b>			
SE Regional Office 1875 Century Blvd Atlanta, GA 30345	Mr. Rodney Beneky	(404) 679-7223	Real estate maps
Culebra National Wildlife Refuge PO Box 190 Culebra, PR 00775	Ms. Teresa Tallevast Mr. Henry Morales	(809) 742-0115	Interviews, maps, logistical support, boat, & endangered species data
<b>Department of Agriculture</b>			
PO Box 30010 Salt Lake City UT 84131	Ms. Sherry Holyoak	(801) 975-3503	Aerial photos
Soil Conservation Ofc PO Box 364868 San Juan, PR 00936	Ms. Doris Rivera	(809) 766-5206	Soil survey

**REFERENCE SOURCES (continued)**

Organization	Name	Telephone	Nature of Support
<b>FEDERAL AGENCIES (continued)</b>			
<b>General Services Administration</b>			
<b>National Archives</b>			
Northeast Region 201 Varick Street New York, NY 10014	Staff	(212) 337-1300	No information
Still Photos Br 8601 Adelphi Rd College Pk, MD 20740	Ms. Adrienne Perkins	(202) 501-5455	Photos in RG 80G & RG 428GXA.
Archives II 8601 Adelphi Rd College Pk, MD 20740	Staff	(301) 713-6800	Information in RG48. Nothing found in RGs 23, 30, 70, 95, 96, 103, & 234.
Cartographic and Architectural Branch 8601 Adelphi Rd College Pk, MD 20740	Mr. Robert Richardson	(301) 713-7040	Information in RG71.
Suitland Branch 4205 Suitland Road Suitland, MD 20409	Ms. Becky Collier	(301) 763-7410	Information in RG 77 & 156. Nothing found in RG 71, 74, 79, 92, 111, 112, 115, 121, 156, 159, 165, 168, 175, 181, 319, 335, 336, 338, 341, 342, 394, & 407.

**REFERENCE SOURCES (continued)**

Organization	Name	Telephone	Nature of Support
<b>FEDERAL AGENCIES (continued)</b>			
<b>General Services Administration (continued)</b>			
<b>National Archives (continued)</b>			
Military Reference Branch, Navy Pennsylvania Ave Washington, DC 20408	Mr. Richard Von Denhoff	(202) 501-5671	Information in RG165 & 269. Nothing found in RG18, 35, 69, 94, 107, 153, 156, 160, 225, 270, 335, 337, 338, 389, 393, & 407.
<b>Department of Commerce</b> National Oceanic and Atmospheric Admin National Ocean Survey Rockville, MD 20852	Staff		Nautical charts
<b>Smithsonian Institution</b> National Air & Space Museum Washington, DC 20560	Mr. Timothy Cronen	(202) 357-3133	Referral
<b>STATE/Commonwealth AGENCIES</b>			
Department of Natural Resources PO Box 217 Culebra, PR 00775	Mr. Abraham Pena Mr. Ricardo Pena	(809) 742-3525	Interviews (I-2 & I-6) and map
State Historic Preservation Office Box 82, La Fortaleza San Juan, PR 00901	Mr. Miguel Bonini	(809) 721-2676	Cultural information

**REFERENCE SOURCES (continued)**

Organization	Name	Telephone	Nature of Support
<b>STATE/Commonwealth Agencies (continued)</b>			
Property Registration Office #6 Antonio Barcelon Fajardo, PR	Mr. Edith Padro	(809) 863-5115	Referral
CRIM Centro Gubernmental Avenida de Cruz Ortiz Estela Humacao, PR	Staff	(809) 852-1484	Current property maps
Airport Authority Culebra, PR 00775	Ms. Julia Padrone	(809) 742-0022	No information
<b>CITY AGENCIES</b>			
Mayor's Office Box 189 Culebra, PR 00775	Mr. Anastacio Soto	(809) 742-0413	Interview (I-1)
Police Department Culebra, PR 00775	LT Robinson	(809) 742-3501	Interview (I-3)
Fire Department Culebra, PR 00775	Mr. Amaro	(809) 742-3530	Interview (I-4)
Office of Tourism Box 189 Culebra, PR 00775	Ms. Maria Carrero	(809) 742-3557	Referral

**REFERENCE SOURCES (continued)**

Organization	Name	Telephone	Nature of Support
<b>NON-GOVERNMENT SOURCES</b>			
<b>STATE/COMMONWEALTH</b>			
University of Puerto Rico Biblioteca General Lazaro PO Box C, UPR Station San Juan, PR 00931	Mr. David Torres	(809) 764-3471	Newspaper articles
Quonset Air Museum PO Box 1571 Kingston, RI 02852	Mr. Chester Browning	(401) 277-2601	Maps
<b>INDIVIDUALS</b>			
Former Mayor Culebra, PR 00775	Mr. Ramon Feliciano	(809) 742-3551	Interview (I-7)
Photographer Culebra, PR 00775	Mr. Justo Rivera	(809) 742-3388	Photographs
Scuba instructor PO Box 467 Culebra, PR 00775	Mr. Gene Thomas	(809) 742-0566(W) 742-3555(H)	Interview (I-9)
Gun site owner PO Box 9125 San Turce, PR 00908	Ms. Nadeen Decicco	(809) 722-0660	Interview (I-11)
<b>NEWSPAPERS</b>			
San Juan Star San Juan, PR	Staff	(809) 782-4200 x377	Referral

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX B

REFERENCES AND ABSTRACTS

## APPENDIX B

### REFERENCES AND ABSTRACTS

B-1. Atlantic Fleet Integrated Weapons Training Ranges, Annex II, Detailed Report on Culebra Complex, prepared by Tippets-Abbott-McCarthy-Stratton Engineers, 16 October 1972 (E-6, E-7, & L-12).

B-2. Memorandum, CINC Atlantic Fleet, 11 June 1973, subject: Time-Phased Plan for Relocation of Training Activities from the Culebra Complex to the Islands of Desecheo (E-8).

B-3. Message, CINC Atlantic Fleet, 201611Z Aug 75, subject: Culebra Weapons Training (F-4).

B-4. Memorandum, CINC Atlantic Fleet, 26 January 1971, subject: Culebra Agreement (F-3).

B-5. U.S. Congress, House of Representatives, Congressional Record, January 30, 1973, subject: Our Mutual Commitments to Culebra.

B-6. Memorandum, Commander, Atlantic Fleet Weapons Range, February 17, 1964, subject: Recommendations Concerning Atlantic Fleet Weapons Range.

B-7. Memorandum from CDR A. E. Benton to Commanding Officer, Atlantic Fleet Weapons Range, 23 October 1974, subject: Trip Report 23-25 October re Culebra Negotiations.

B-8. Message, COMLANTNAVFACENGCOM, 100141Z Aug 74, subject: Culebra Negotiations.

B-9. Info paper, undated, by CDR Benton, subject: Long Term Requirements for Flamenco Point Operations.

B-10. Info paper, undated, subject: Inner Range Briefing for Captain Hill.

B-11. Message, COMLANTFLIRANSUPPFAC, 251630Z Mar 69, subject: Unsafe Firing Incident.

B-12. Page extracted from Navy report, general subject: range safety, circa 1970.

B-13. Atlantic Fleet Weapons Range, Final Report: Acceptance Test for Babcock Bomb/Rocket Scoring System, 10 April 1974.

B-14. Speedletter, Commander Atlantic Fleet Weapons Range, Jan 31, 1967, subject: Request for determination of mortar ammunition storage requirements at Culebra, PR.

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ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX C

GLOSSARY

## APPENDIX C

### Glossary

AFWTF	Atlantic Fleet Weapons Training Facility
AP	Armor piercing
BD/DR	Building Demolition/Debris Removal
CEHND	U.S. Army Engineer, Huntsville Division
CENCR	U.S. Army Engineer, Rock Island District
CESAD	U.S. Army Engineer, South Atlantic Division
CESAJ	U.S. Army Engineer, Jacksonville District
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CG	Coast Guard or Commanding General
CWM	Chemical Warfare Material
DA	Department of Army
DERP	Defense Environmental Restoration Program
DNR	Department of Natural Resources
DOD	Department of Defense
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
FDE	Findings and Determination of Eligibility
FS	Feasibility Study
FUDS	Formerly Used Defense Site(s)
FWS	Fish and Wildlife Service
GP	General Purpose
GSA	General Services Administration
HC	High Capacity or Hexachloroethane
HE	High Explosive
HEI	High Explosive Incendiary
HTRW	Hazardous, Toxic and Radiological Waste
HTW	Hazardous and Toxic Waste
HVAR	High Velocity Aerial Rocket
INPR	Inventory Project Report
IRP	Installation Restoration Program
M	Model Number
Mk	Mark
MM or mm	Millimeter
NAS	Naval Air Station
NGFS	Naval Gunfire Support
NS	Naval Station
NWR	National Wildlife Refuge
OEW	Ordnance and Explosive Waste
OP	Observation Post or Ordnance Pamphlet
PA	Preliminary Assessment
PD	Point Detonating
PRP	Potentially Responsible Party
RA	Remedial Action

RAC	Risk Assessment Code
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SARA	Superfund Amendments and Reauthorization Act
SI	Site Investigation or Site Inspection
TM	Technical Manual
UK	United Kingdom
USA	U.S. Army
USACE	U.S. Army Corps of Engineers
USADACS	U.S. Army Defense Ammunition Center and School
USAEDH	U.S. Army Engineer Division, Huntsville
USATCES	U.S. Army Technical Center for Explosives Safety
USAF	U. S. Air Force
USCG	U.S. Coast Guard
USN	U.S. Navy
UXO	Unexploded Ordnance
WP	White Phosphorous

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX D

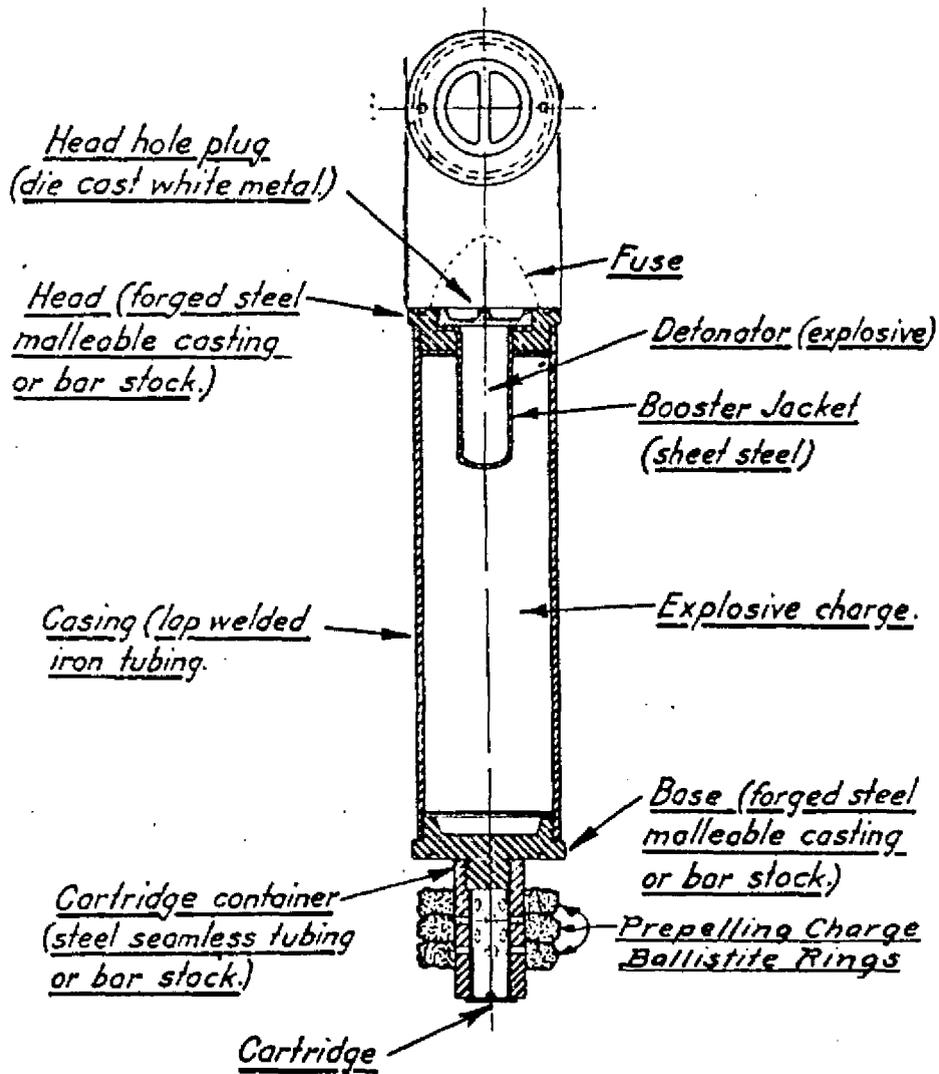
TEXTS/MANUALS

APPENDIX D

TEXTS / MANUALS

Table of Contents

- D-1. Typical 3 inch Stokes mortar round (B-145).
- D-2. 81mm WP mortar round (B-141).
- D-3. Typical 40mm projectiles (B-140).
- D-4. Typical 5"/38 WP projectile (B-140).
- D-5. Typical 6"/47 HC (High Capacity) projectile (B-139).
- D-6. Typical 8"/55 AP projectile (B-139).
- D-7. Typical 16" HC projectile (B-139).
- D-8. 20mm HEI cartridge (B-137).
- D-9. 2.75" FFAR (B-138).
- D-10. 5" HVAR (B-140).
- D-11. 11.75" rocket (B-140).
- D-12. Typical aircraft flare (B-140).
- D-13. Typical old type GP bomb (B-136).
- D-14. Mk 80 series new type GP bombs (B-142).
- D-15. Mk 76 and Mk 106 practice bombs (B-142).
- D-16. Typical torpedo (B-143).
- D-17. Typical controlled mine, circa 1900 (B-144).

3 INCH STOKES TRENCH MORTAR SHELL.Tubing Construction

Production Division  
Gun Section  
Franklin  
James F. Lyon,  
Chief D.D.M.E.  
Drawn by [unclear] X-107

FIG. 97.—Detail of 3-inch Stokes trench mortar shell.

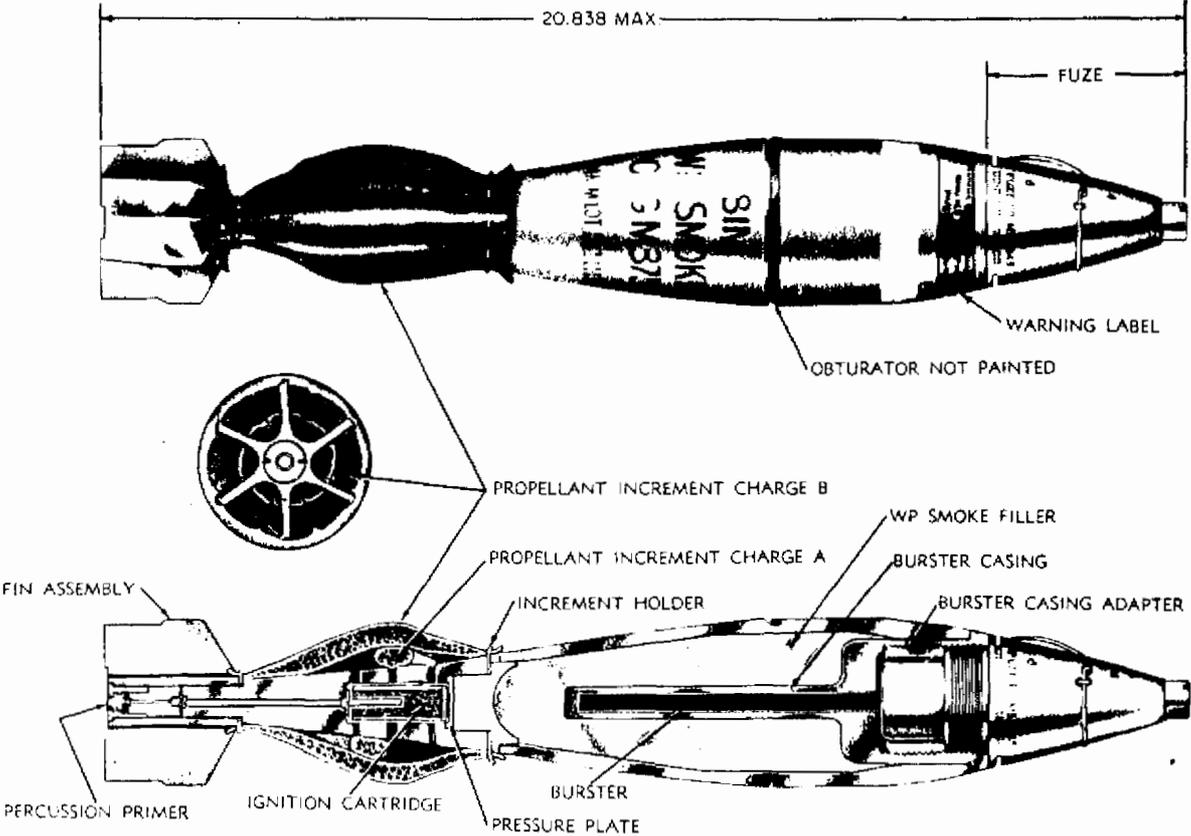
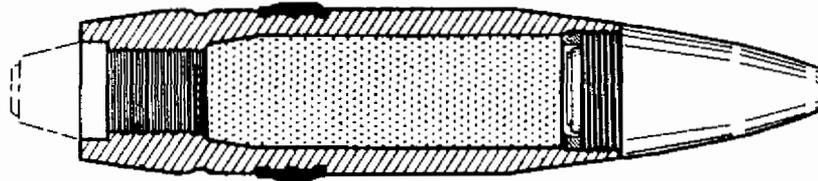


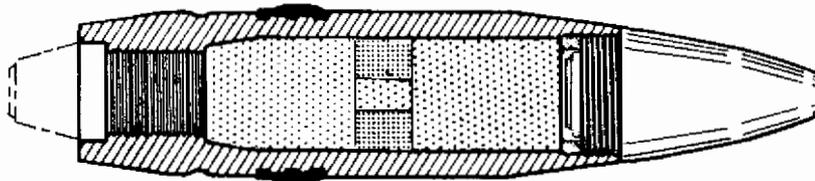
FIGURE 5-25 81 MM WP SMOKE CARTRIDGE M375

Part I — Chapter I — Section 12

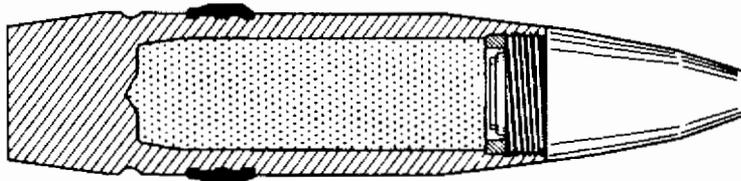
40-mm PROJECTILES



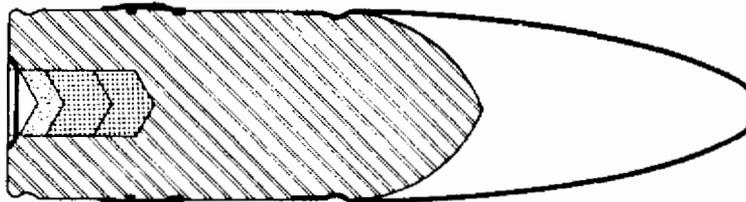
MK 2 HE



MK 2 HE-I



MK 3 HE & HE-I



M 81 AI

Figure 76. 40-mm Projectiles

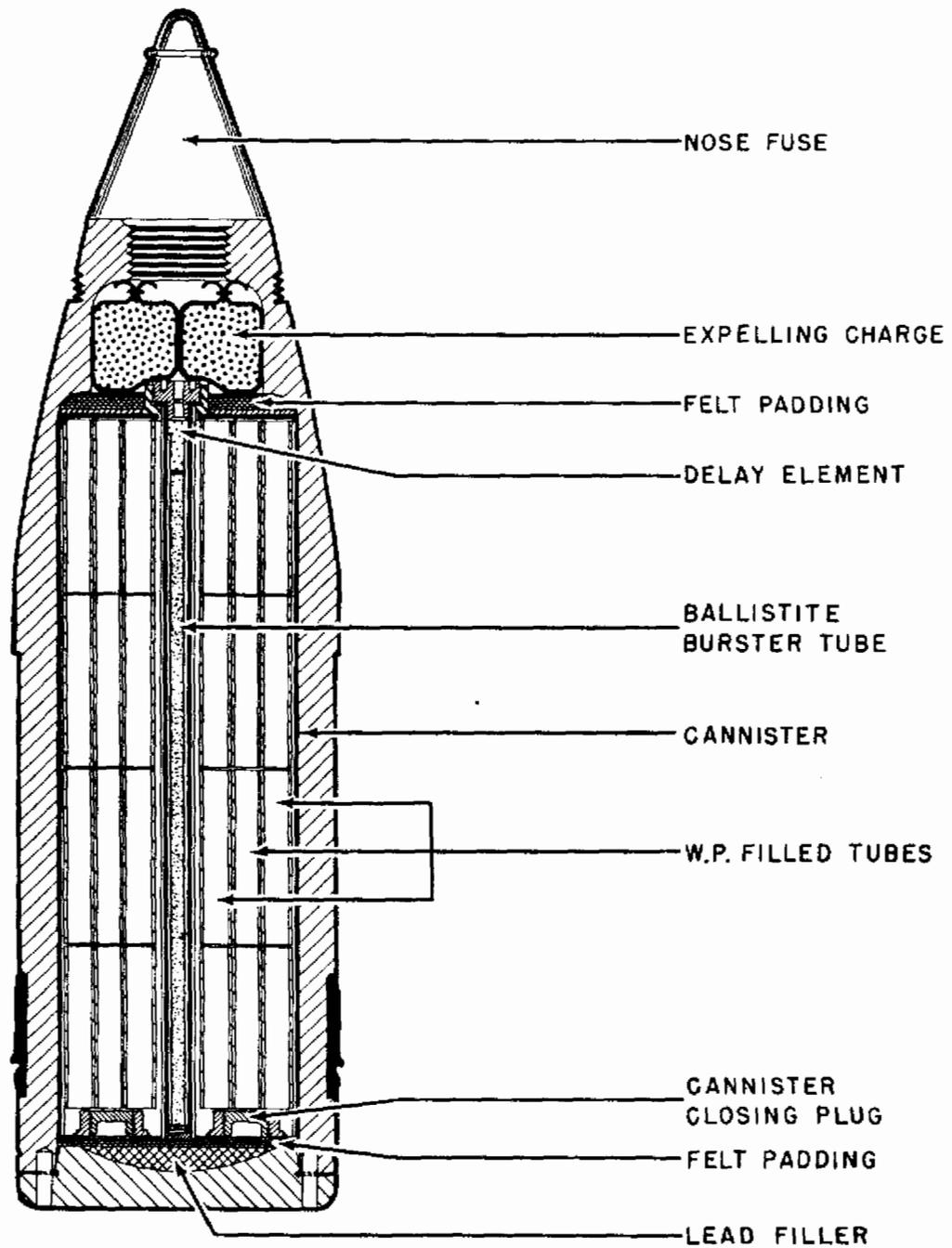
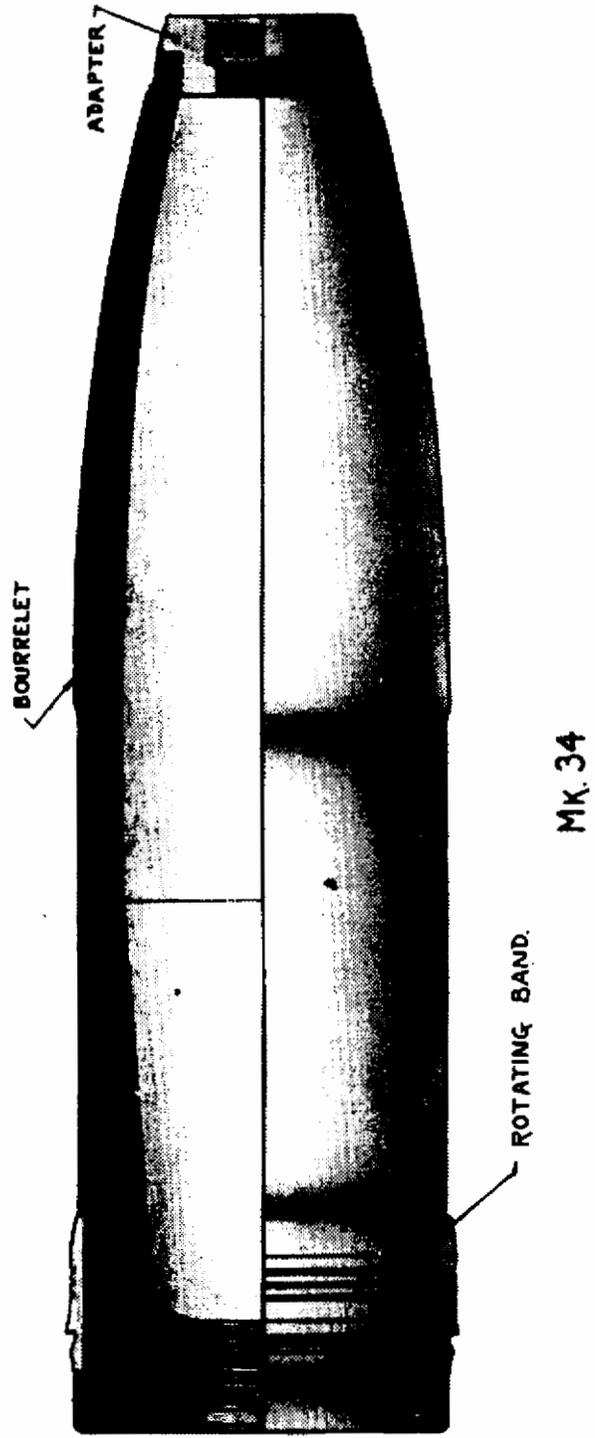


Figure 42. 5-inch White Phosphorus Projectile

PROJECTILE DATA

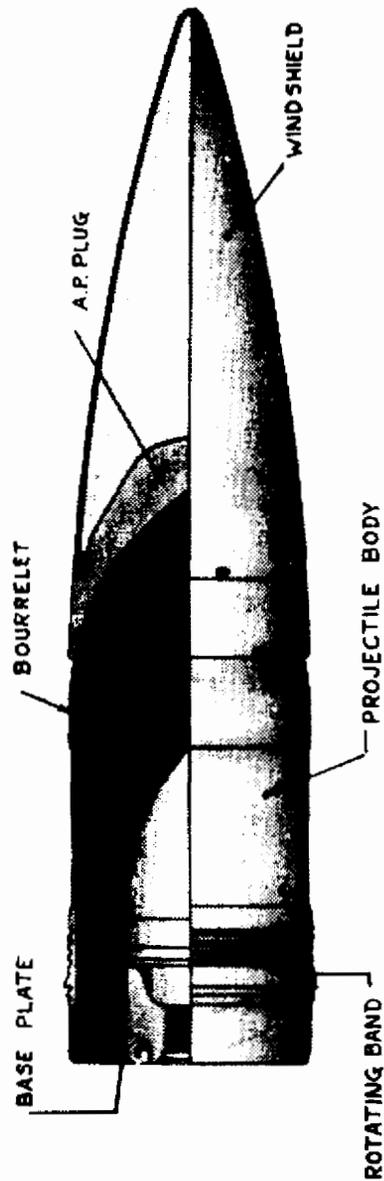
NATIONALITY: U.S. NAVY	INFORMATION DATE: April, 1943
CALIBER: 6"/47 and 6"/53 Mk. 34	CLASSIFICATION: High Capacity (H.C.)
TARGET: Used effectively in bombarding shore installations because of the high loading factor. Also, used against lightly armored vessels such as cruisers, aircraft carriers, etc.	



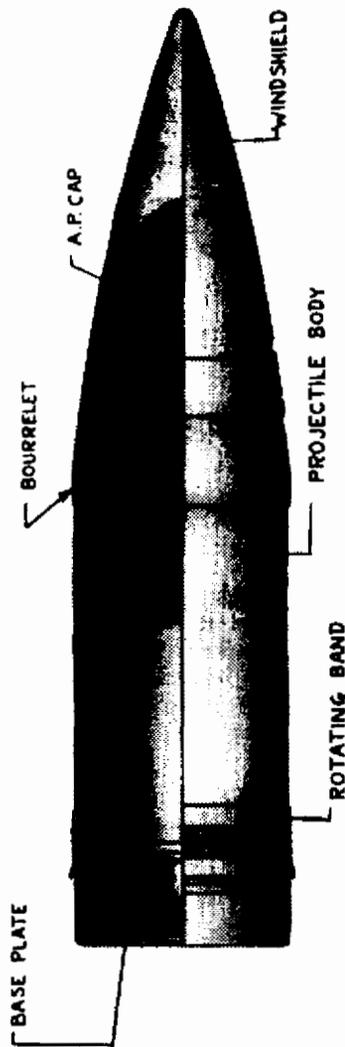
C-O-N-F-I-D-E-N-T-I-A-L

PROJECTILE DATA

NATIONALITY: U.S. NAVY	INFORMATION DATE: April, 1943
CALIBER: 8"/55 - Mks. 19 & 21	CLASSIFICATION: A.P.
TARGET: Used against heavily armored vessels and fortifications.	



Mk. XIX

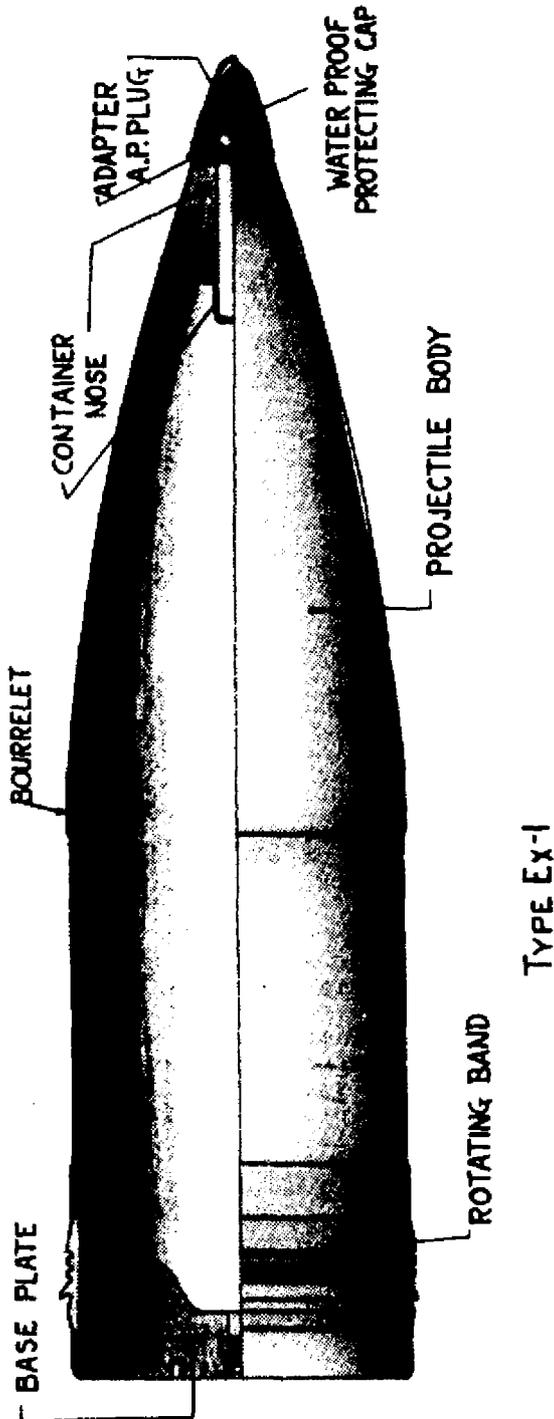


Mk. 21

C-O-N-F-I-D-E-N-T-I-A-L

PROJECTILE DATA

NATIONALITY: U.S. NAVY	INFORMATION DATE: April, 1943
CALIBER: 16" - Type EX-1 1900 lbs.	CLASSIFICATION: High Capacity
TARGET: This projectile, having a high loading factory, is effective in bombardment raids on all types of shore installations and against lightly armored vessels such as cruisers, aircraft carriers, etc.	



C-O-N-F-I-D-E-N-T-I-A-L

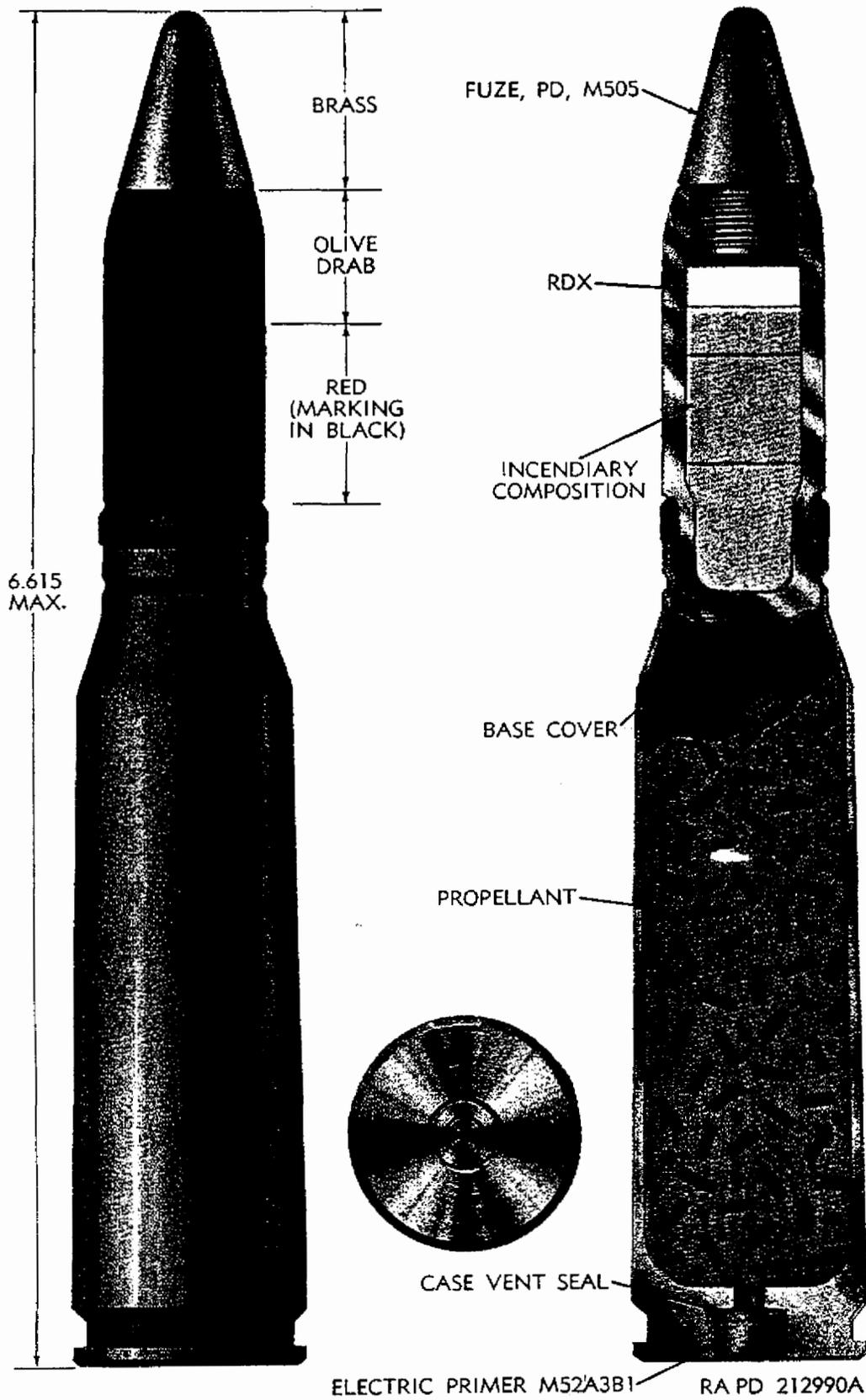


Figure 13. Cartridge, 20 millimeter: electric, HEI, M56A1 (T198E1), w/fuze, PD, M505.

## Section X. AIRCRAFT ROCKETS

### 5-25. General

a. Aircraft rockets can be employed effectively against other aircraft, personnel, personnel carriers, ammunition storage areas, fuel tanks, radar equipment and similar targets.

b. The folding fin aircraft rocket (FFAR) is a 2.75-inch air-to-air, air-to-ground rocket designed for deployment from highspeed fighter and attack aircraft.

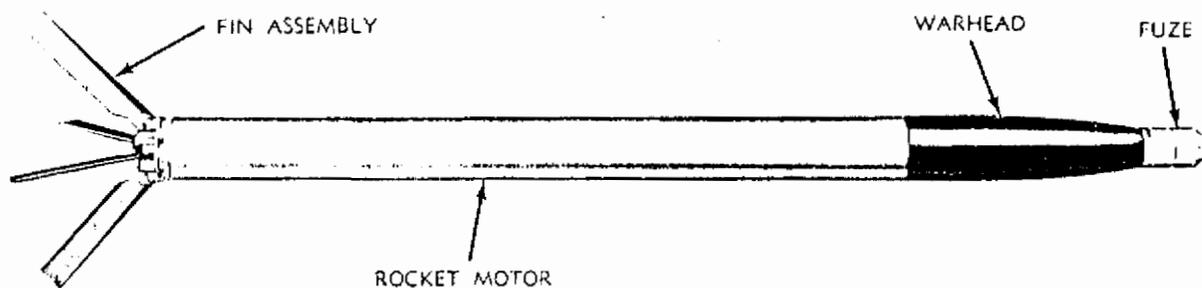
c. The low-spin, folding fin aircraft rocket (LSFFAR) is a 2.75-inch air-to-ground rocket deployed from rotary wing and other low speed aircraft. It differs from the FFAR primarily in that the nozzles are scarfed to produce the low rate of spin required for launch at low speeds.

### 5-26. Type

a. Depending upon the type of warhead used the complete round rocket (fig. 5-13) is classified as high explosive, high-explosive antitank, anti-personnel, spotting, smoke or practice.

b. These rockets, consisting of a warhead, fuze and motor-and-fin assembly, have the following characteristics:

Velocity	.....	1600—2200 fps
Range	.....	500—800 m
Weight	.....	18—29 lb
Length	.....	48.8—62.8 in.
Type	.....	HE, HEAT, APERS, spotting, smok and practice
Fuze	.....	PD, PROX, PIBD
Stabilizer	.....	Fin
Launcher	.....	Aircraft (multiple, nested tubes)



MU-DB 2449

Figure 5-13. Typical 2.75-inch aircraft rocket.

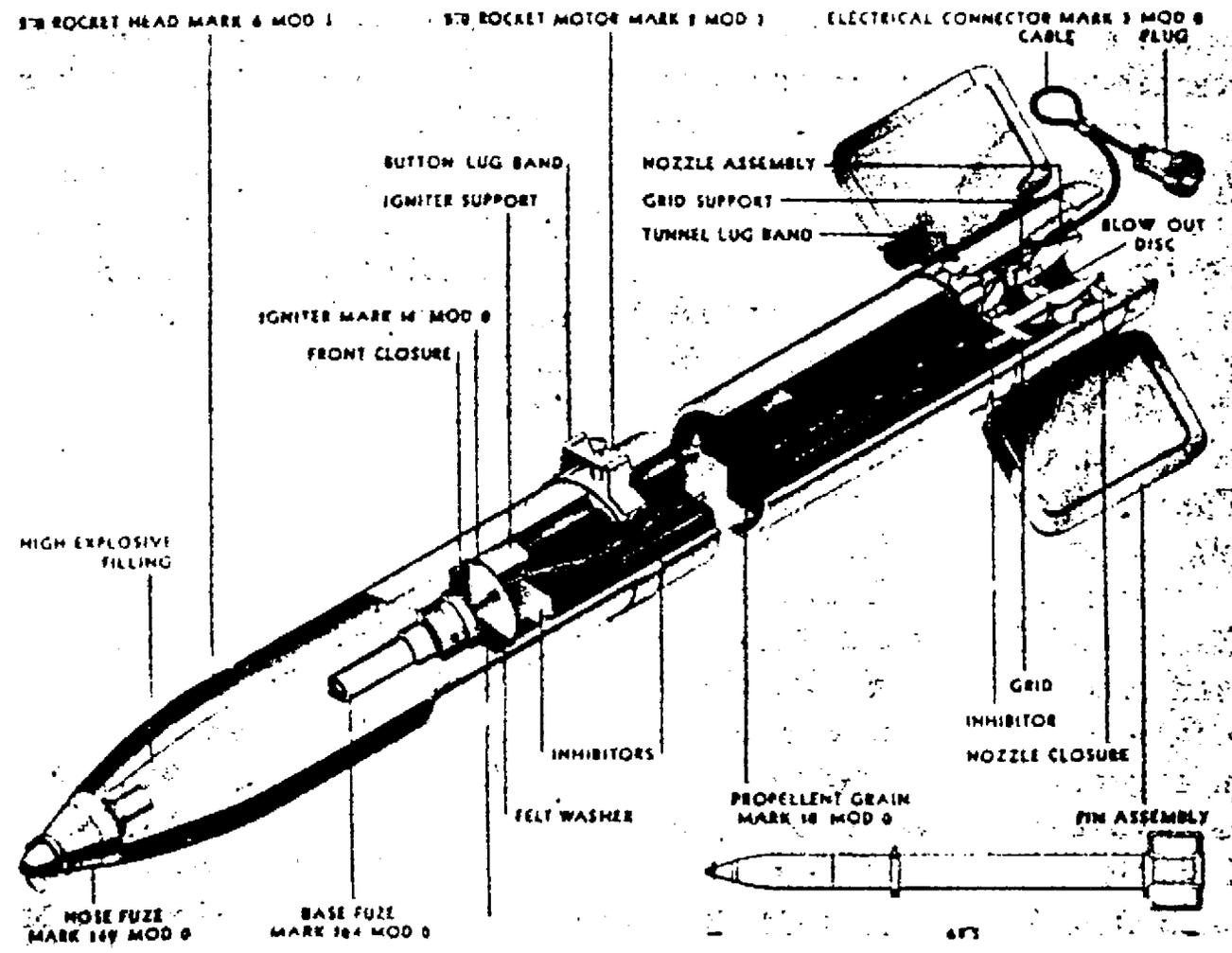


Figure 132. 5.0-inch A.R. with 5.0-inch Motor

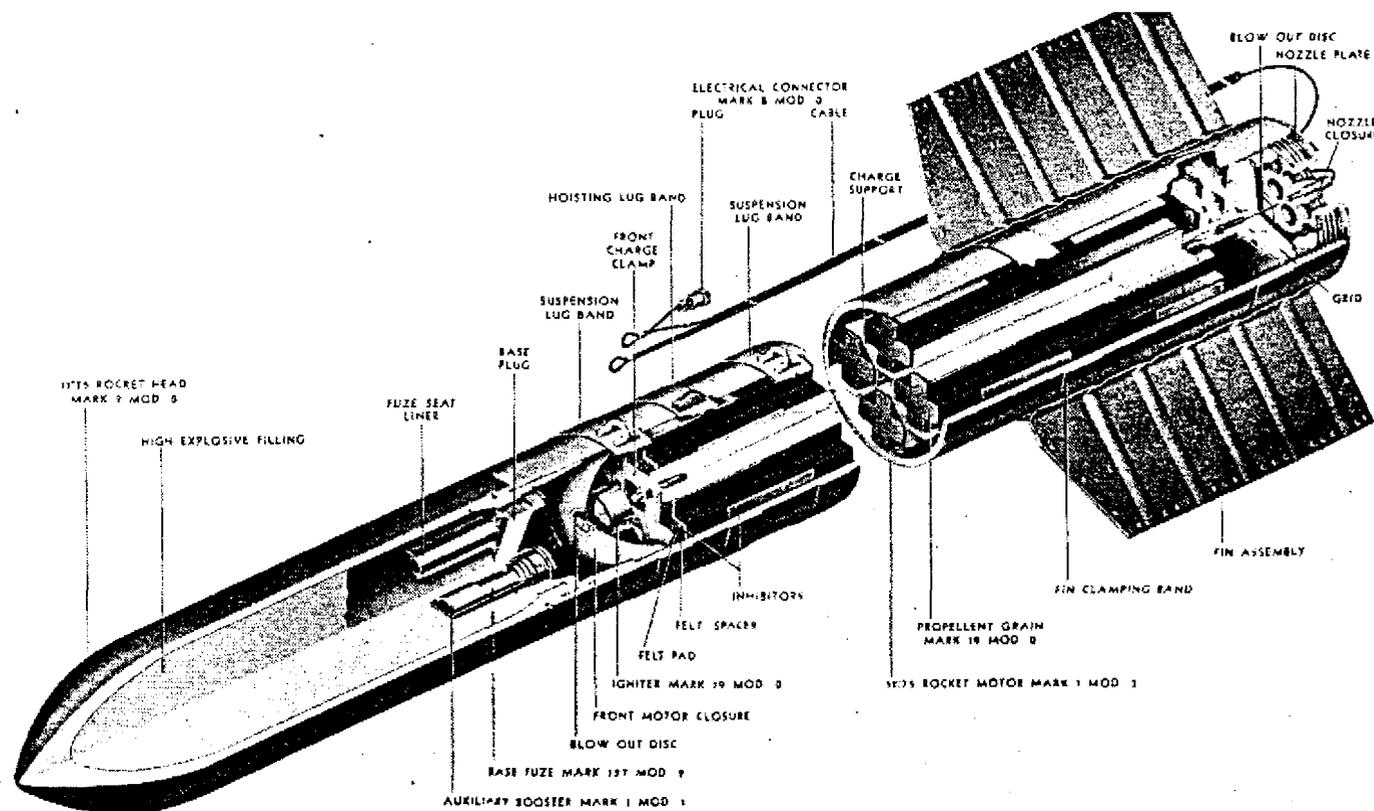


Figure 139. 11.75-inch A.R. "Tiny Tim"

U. S. EXPLOSIVE ORDNANCE

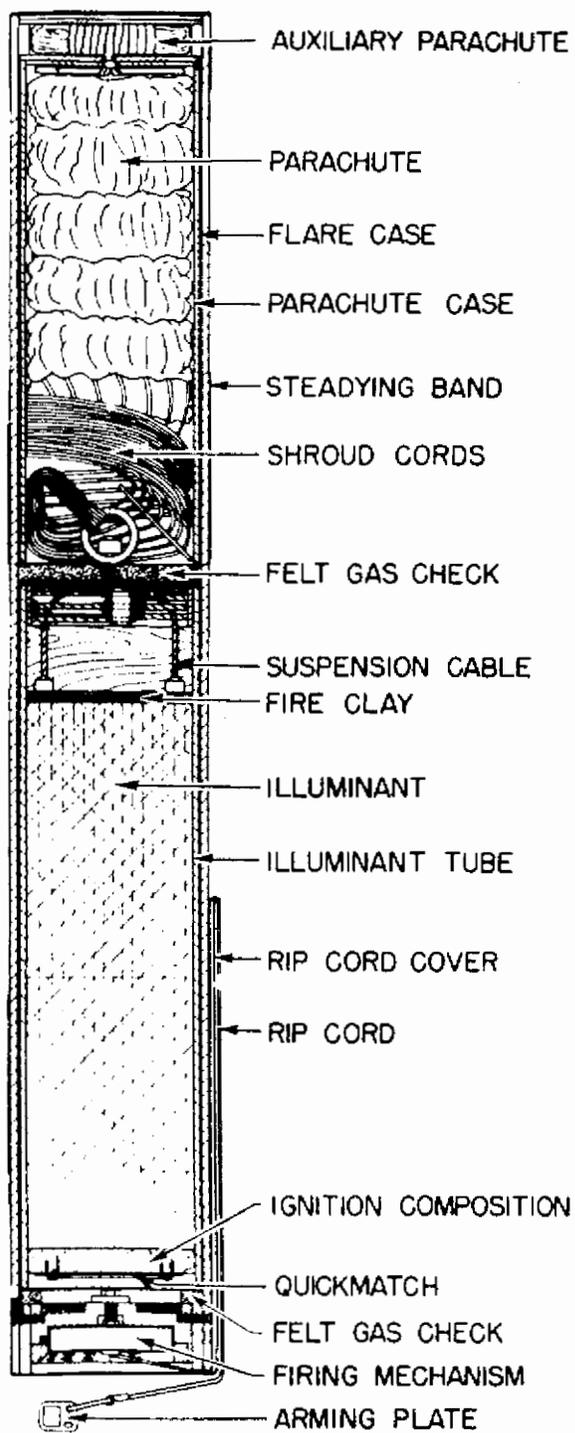


Figure 180. Flare Mk 6 Type

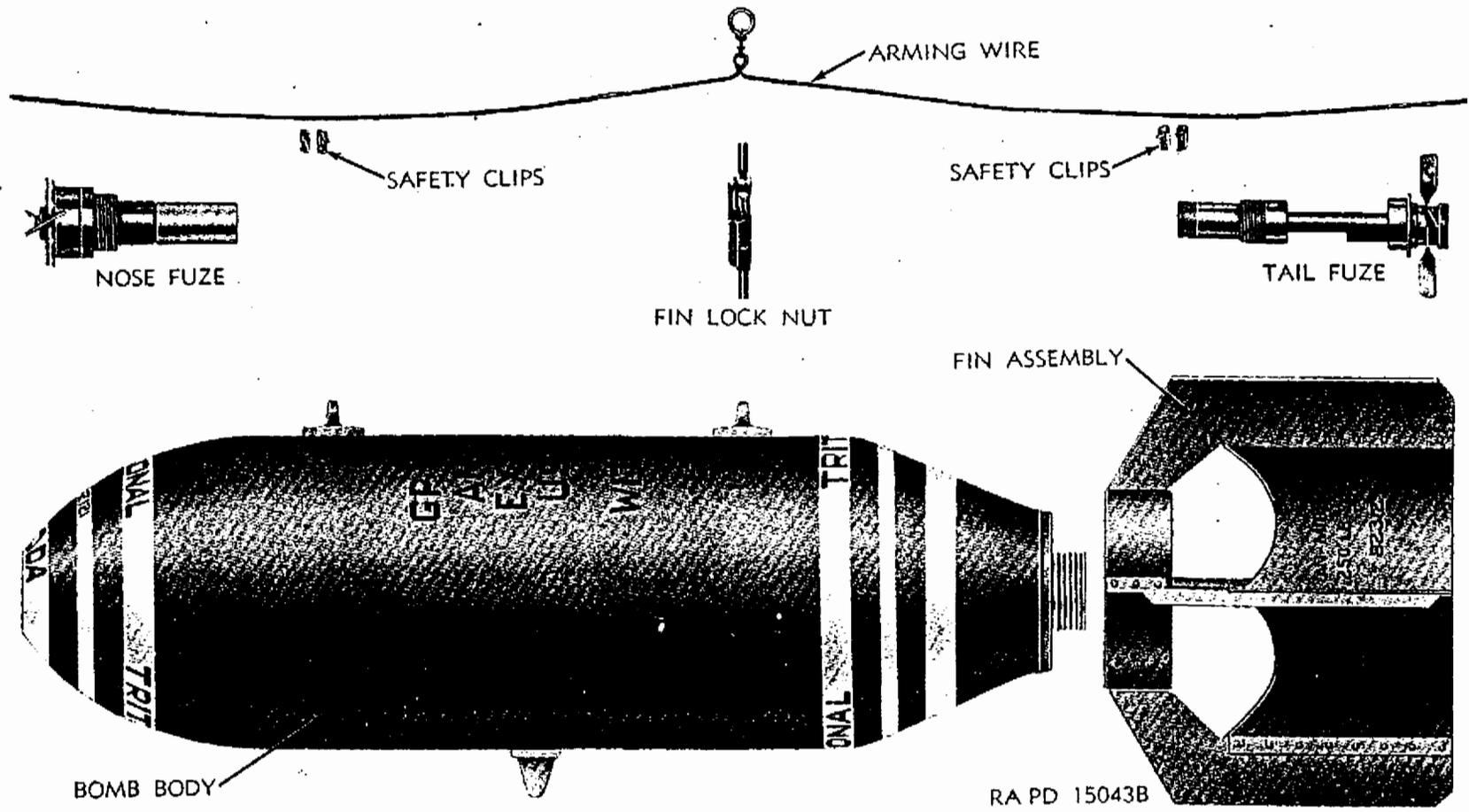
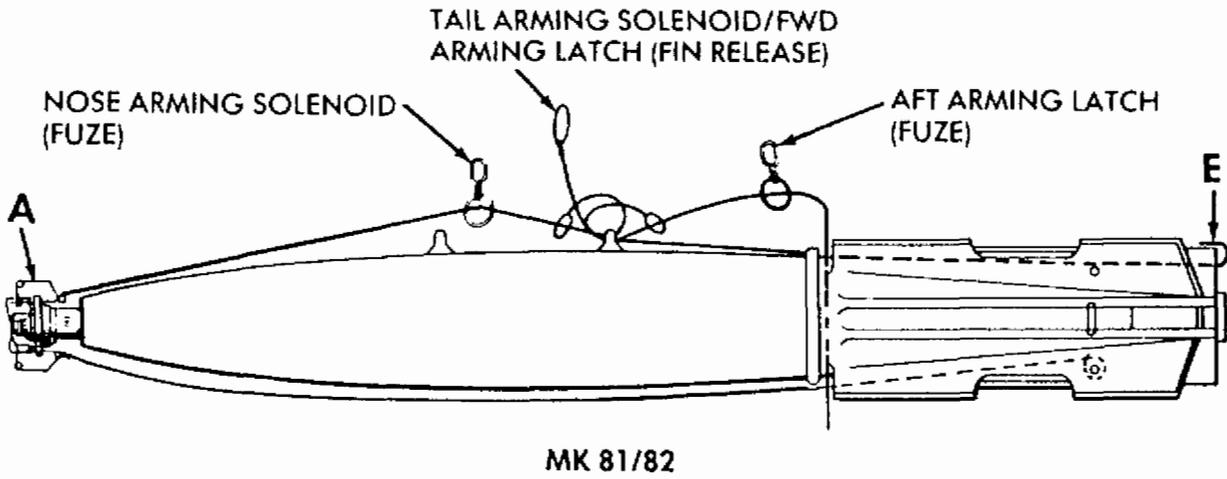
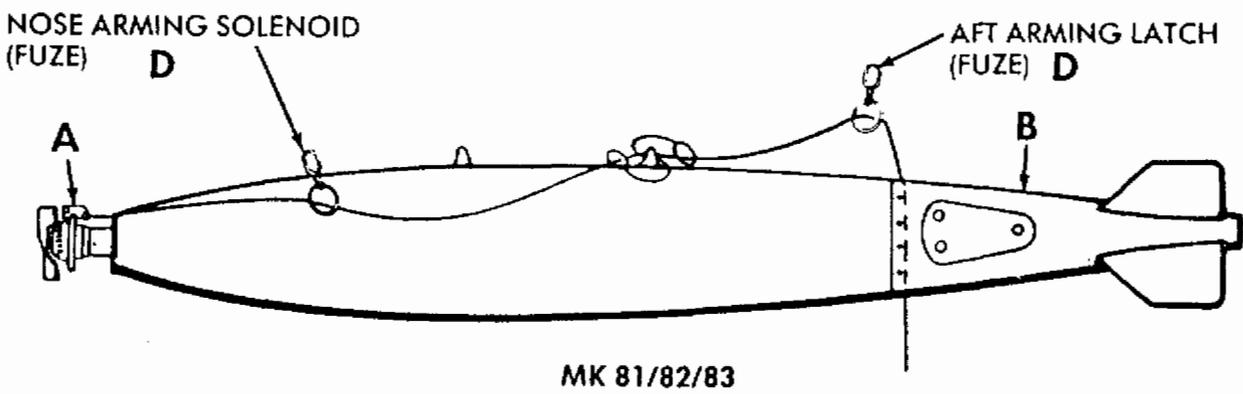


Figure 110. Components of bombs.

NAVAIR 11-140-5  
PRELOADING/DOWNLOADING  
ACCESSORY SUSPENSION EQUIPMENT



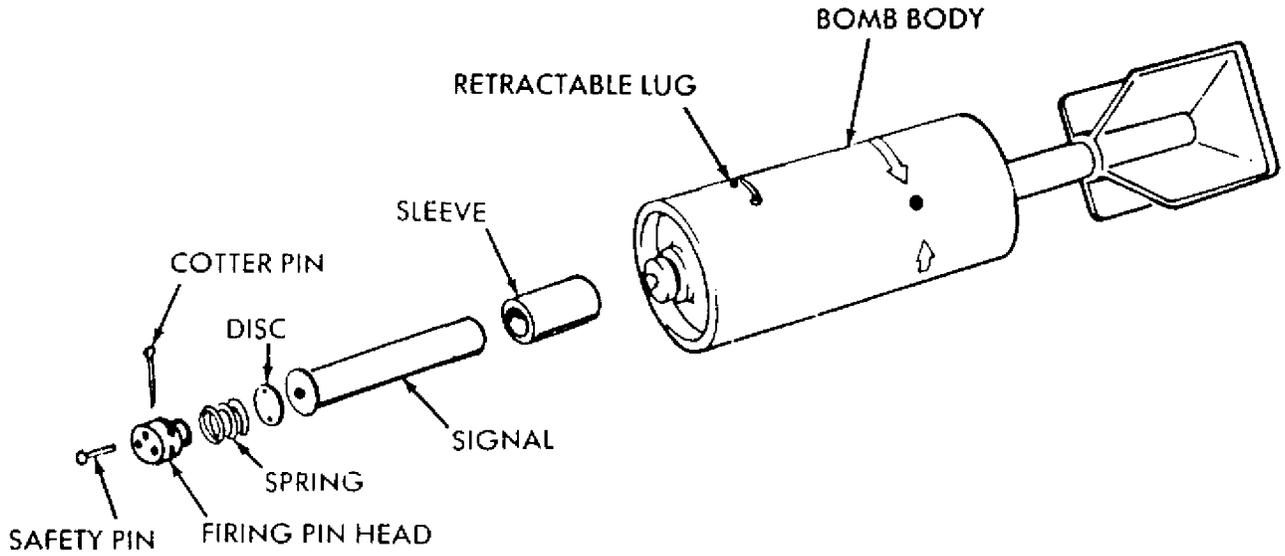


Figure 11-55. Practice Bomb MK 106 Mods

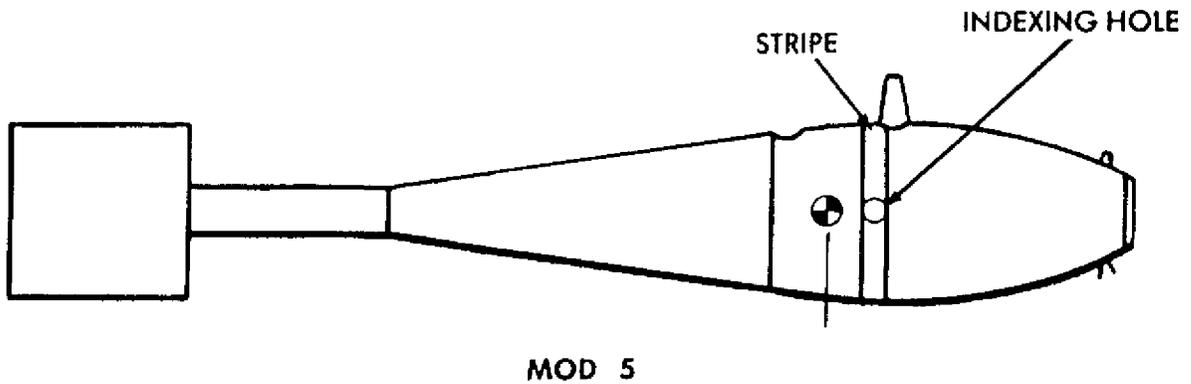
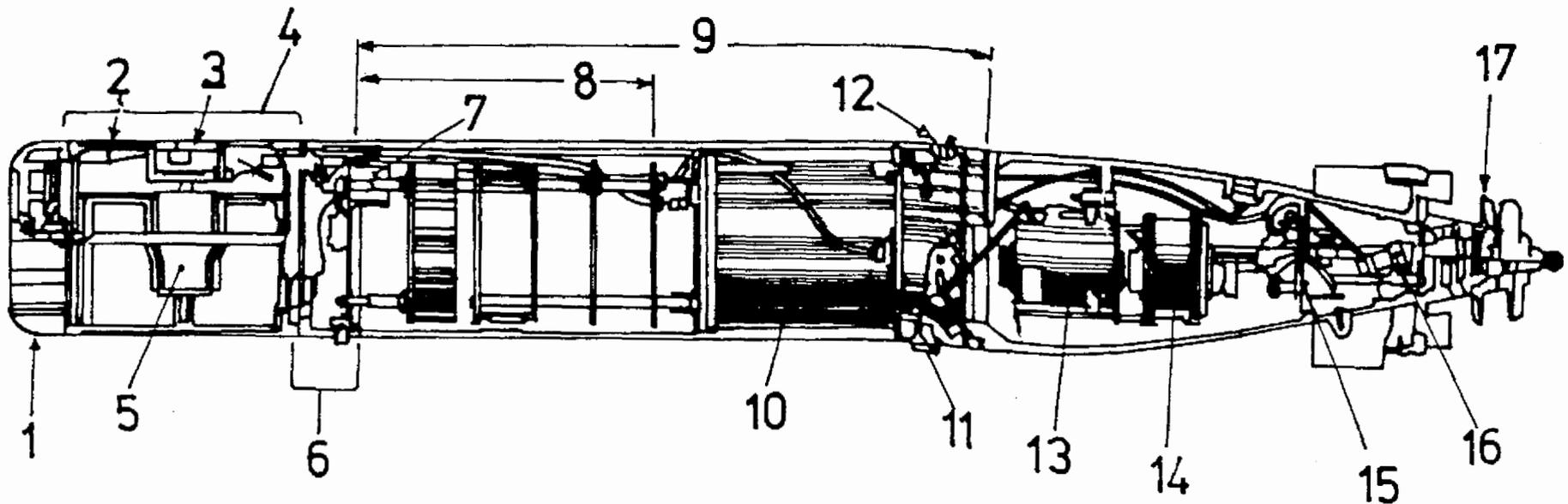


Figure 11-54. Practice Bomb MK 76 Mod 5

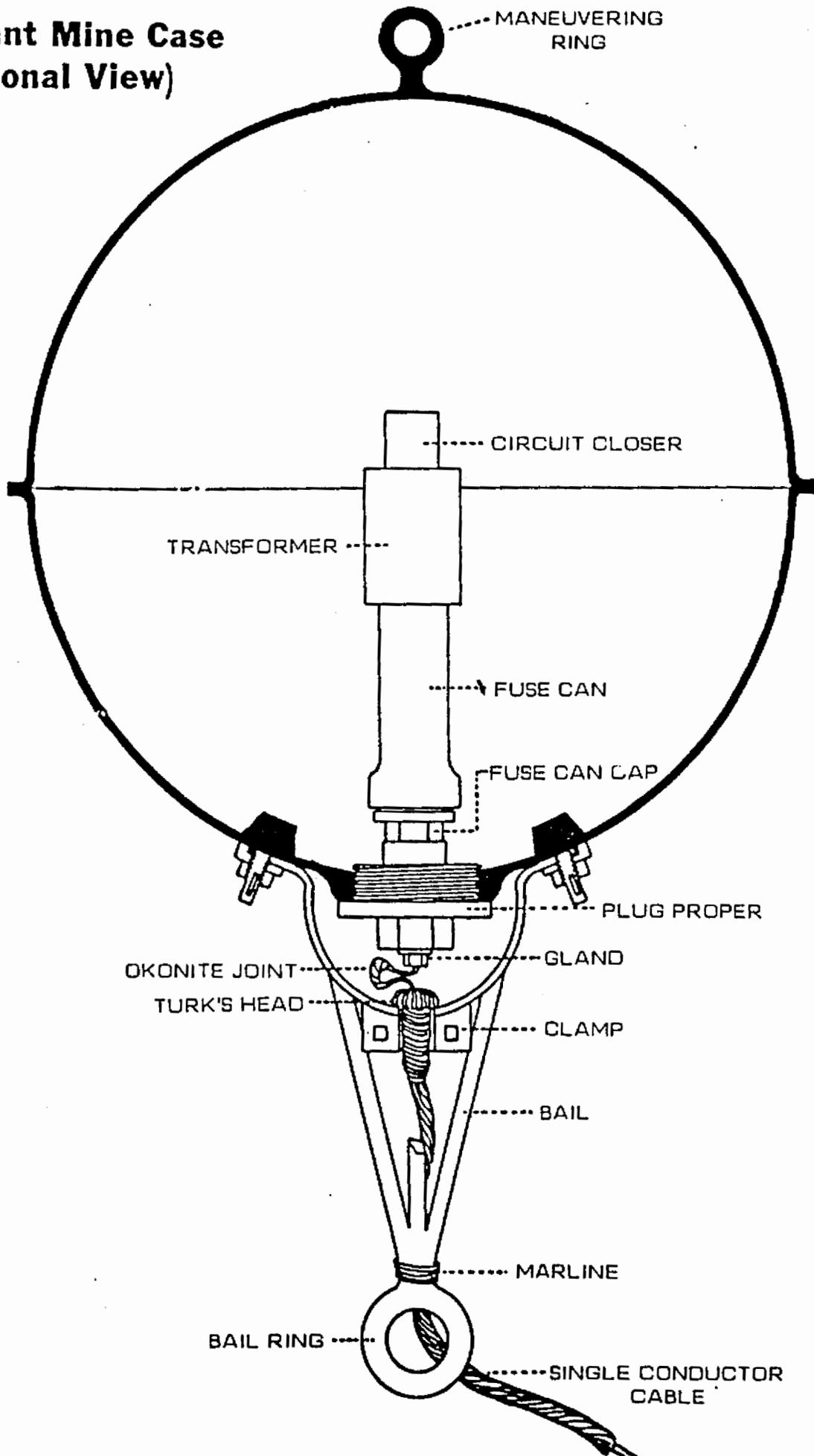


THE TORPEDO MARK 44

Key

- |                                  |                    |                   |
|----------------------------------|--------------------|-------------------|
| 1 Nose section (acoustic sensor) | 4 Warhead          | 11 Scoop          |
| 2 Fuzing line                    | 5 Fuze             | 12 Safety valve   |
| 3 Fuze cover                     | 6 Coupling section | 13 Electric motor |
|                                  | 7 Gyro             | 14 Power train    |
|                                  | 8 Guidance panel   | 15 Steering drive |
|                                  | 9 Power section    | 16 Side yoke      |
|                                  | 10 Battery         | 17 Propeller      |

# Buoyant Mine Case (Sectional View)



ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX E

REPORTS/STUDIES

APPENDIX E  
REPORTS / STUDIES

Table of Contents

- E-1. INPR (ref B-131).
- E-2. Geologic map (B-87).
- E-3. Soil map (B-87).
- E-4. 1994 Tide tables (B-104).
- E-5. 1994 Tidal current tables (B-105).
- E-6. Safety zones (B-1).
- E-7. 1972 Navy report (B-1).
- E-8. 1973 Navy report (B-3).
- E-9. 1949 Historical data (B-110).

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM  
FOR FORMERLY USED DEFENSE SITES  
FINDINGS AND DETERMINATION OF ELIGIBILITY

Culebra Island National Wildlife Refuge, PR

Site No. IO2PROO6800

FINDINGS OF FACT

1. Between 1903 and 1964, the United States acquired 2747.12 acres of land on Culebra Island (2067.8 acres fee), Culebrita Island (266.0 acres fee), Luis Pena Cay (342.5 acres fee), Water Cay (7 acres fee) and the adjacent cayos (63.82 acres leased), for a bombing and gunnery range and auxiliary airfield for the Navy. The United States acquired fee title to 2135 acres of land from Spain (1785.5 acres on Culebra Island, the 342.5 acres on Luis Pena Cay, and the 7 acres on Water Cay). These lands were transferred to the Navy by Presidential Proclamation of 26 June 1903. The Navy acquired 13.83 acres by purchase in 1903 and 268.47 acres by donation in 1939, all on Culebra Island. In the early 1940's, 265.59 acres of fee land on Culebrita Island and Ladrones Cay were transferred to the Navy from the Coast Guard; 63.82 acres were acquired by leases for the Navy on adjacent cayos; and 0.41 of an acre on Culebrita Island was acquired by permit from the Coast Guard.

2. The lands were part of the U.S. Naval Station, Roosevelt Roads, Culebra Island and were utilized by the Navy as a coaling station, training area, auxiliary airport, weapons range, and bombing and gunnery range. The Navy constructed various improvements including a range operation center, maintenance sheds, helicopter landing pad, security fencing, warehouses, storage tanks, septic tanks, water distribution building, pumping stations, housing, and an auxiliary landing field including runways, taxiways, etc. Parts of the property (approximately 990 acres on Culebra Island) were utilized by others by virtue of outgrants from the Navy, prior to the Navy declaring the property as excess. The remainder of the property was under Department of Defense (DOD) control during the period of DOD ownership.

3. The Navy terminated the leases on the 63.82 acres on the adjacent cayos in 1972 and returned the property to the then current owners. The terms and conditions of the leases and termination notices or any restoration requirements are unknown as copies of these instruments could not be located. On 5 July 1972, the Navy reported 1089.80 acres of the site excess to the General Services Administration (GSA). On 19 May 1976, the Navy reported an additional 1501.5 acres excess to GSA. On 28 March 1978, the Navy transferred 4.09 acres on Culebrita Island to the Coast Guard and terminated the permit from the Coast Guard comprising 0.41 of an acre located on Culebrita Island, which is still utilized by the Coast Guard. The Navy retained and still utilizes 87.5 acres on Culebra Island.

4. The lands reported excess to GSA were disposed of as follows:

a. The Navy (at the direction of GSA) transferred 611 acres (342.5 acres on Luis Pena Cay, 261.5 acres on Culebrita Island, and 7 acres on

Water Cay) and 776.35 acres on Culebra Island, together with all improvements, to the Department of Interior, Fish and Wildlife Service (FWS) on 23 March 1978 and 15 September 1978, respectively. All 1387.35 acres transferred to the FWS comprise the Culebra Island National Wildlife Refuge.

b. By quitclaim deed dated 7 February 1980, GSA conveyed fee title to 79.73 acres to the Puerto Rico Ports Authority on Culebra Island for public airport purposes. The deed contained a recapture and reverter clause and was subject to existing easements for public highways, roads, utilities, etc. This property is utilized as a public airport.

c. By quitclaim deed dated 11 August 1982, the United States of America, through the Secretary of the Interior, conveyed 935.98 acres to the Commonwealth of Puerto Rico on Culebra Island. The deed contained a reverter clause and other restrictions pertaining to the development of the property, including a restriction that the bombardment area, composed of 644.99 acres, would be utilized only for public park or public recreational purposes. The deed contained language that the Commonwealth agreed to accept the bombardment area in its present condition, that the United States would not be held responsible for decontamination, and that the United States would be held harmless from any and all claims, demands, actions, etc., arising from any person's use of or presence on the property. This property is utilized for park purposes.

d. By quitclaim deed dated 24 February 1984, GSA conveyed 32.34 acres to the Department of Housing, Commonwealth of Puerto Rico on Culebra Island, which is not public housing. The deed contained no restrictions, reverter, or recapture clauses.

e. By quitclaim deed dated 29 April 1988, GSA conveyed 155.9 acres on Culebra Island to the Municipality of Culebra, Puerto Rico. This deed contained no warranties, recapture, or reverter clauses, but was subject to existing easements for public highways, roads utilities, etc., and contained a hold harmless clause in favor of the United States. This site is being utilized for city facilities and is under development as a port.

DETERMINATION

Based on the foregoing Findings of Fact, the site, except for the 87.5 acres still under control of the Navy, has been determined to be formerly used by the Department of Defense. It is therefore eligible for the Defense Environmental Restoration Program - Formerly Used Defense Sites established under 10 U.S.C. 2701, et seq.

24 Dec 1991  
DATE

for K. H. E. Sobke LTC EN  
JOHN F. SOBKE  
Major General, USA  
Commanding

PROJECT SUMMARY SHEET  
FOR  
DERP-FUDS OEW PROJECT NO. I02PR006802  
CULEBRA ISLAND NWR, P.R.  
SITE NO. I02PR006800  
May 9, 1991

PROJECT DESCRIPTION: Ordnance detection and removal actions are needed for about 11 sites on the island and adjacent cayos. The sites in question are former Navy bombing and gunnery training ranges. The range areas are depicted on a USGS map No. 4R-P.R.-52-403 of the U.S. Fish and Wildlife Service Culebra National Wildlife Refuge (USFWS) attached. The impact areas are not fenced, and sporadic markings and bomb casings were found. The USFWS personnel stated that shell fragments had been collected from the sites and that unexploded rounds had been found. The range areas are generally used for camping, hunting, scuba diving, fishing, and walking. There was no evidence of ordnance outside the impact areas.

PROJECT ELIGIBILITY: Records and maps indicate that the bombing and gunnery training range was built and used by the Navy from 1940 to 1975.

POLICY CONSIDERATIONS; Current Department of Defense (DOD) policy permits Remediation of DOD generated ordnance. The title transfer documents do not absolve the government from site restoration responsibility; the USFWS did not receive compensation in lieu of restoration; the property has not been altered or beneficially used for ordnance related purposes by subsequent owners; and there were no deed restrictions violated.

PROPOSED ACTIVITIES: The Inventory Project Report should be referred to HND for action. This action should consist of at least a metal sweep of the area to determine the likelihood of further ordnance problems and removal of ordnance detected.

RAC: See attachment.

POINT OF CONTACT: Ivan Acosta, CESAJ-PD-EE, 904-791-2117.

PROJECT SUMMARY SHEET  
FOR  
DERP-FUDS HIW PROJECT NO. I02PR006801  
CULEBRA ISLAND NWR, P.R.  
SITE NO. I02PR006800  
May 9, 1991

PROJECT DESCRIPTION: The U.S. Fish and Wildlife Service stated that the wetland area near their building facility was used as a debris and oil dumping site by the Navy. No documentation remains as to when the aforementioned activity occurred. Also there is an unidentified underground concrete tank uphill from the wetland area that has been tentatively identified as a septic tank. No testing has been done on this site.

PROJECT ELIGIBILITY: Records indicate that a building uphill from the area in question was used by the Navy as a wash rack for their vehicles and as a fuel and oil storage facility. These places were subsequently closed when the Navy disposed of the sites. Since this site was disposed of in 1975, there is a strong probability that contamination may still be present.

POLICY CONSIDERATIONS: There is no policy which prohibits the proposal of this project. Currently Department of Defense (DOD) policy permits remedial investigation and action at sites affected by former DOD use.

EPA Form 2070-12: Enclosed

PROPOSED ACTIVITIES: This potential project should be referred to CESAS for negotiation with regulatory agencies and a determination of further action.

POINT OF CONTACT: Ivan Acosta, (904) 791-2117.

SITE SURVEY SUMMARY SHEET  
FOR  
DERP-FUDS SITE NO. I02PR006800  
CULEBRA ISLAND NWR, P.R.  
9 MAY 1991

SITE NAME: Culebra Island National Wildlife Refuge and adjacent cayos, P.R., see site and location map.

SITE HISTORY: War Department use began in 1940 with the transfer of portions of Culebra Island from the Department of Interior to the Navy for use as a bombing and gunnery training range. The areas in question were deactivated in 1975 and transferred back to the Department of the Interior, U.S. Fish and Wildlife Service (USFWS), the Department of Natural Resources, the Puerto Rico Port Authority, the municipality of Culebra, and the Department of Housing, Commonwealth of P.R.

SITE VISIT: A site visit was conducted on 30 April 1991 by Mr. Ivan Acosta, CESAJ-PD-EE, and Mr. Henry Morales, USFWS National Wildlife Refuge representative. Mr. Morales is a native of the island and is familiar with the affected areas. Additionally, a letter from Mr. Kelly Wolcott, Refuge Manager, describing the areas of concern is provided.

CATEGORY OF HAZARD: HIW, OEW.

PROJECT DESCRIPTION: There are two potential projects in the area (one OEW project consisting of eleven sites and one HIW project).

a. HIW. There is a wetland area in the vicinity of the USFWS facility that may contain toxic materials. This site was down gradient of the motor pool and had anecdotal evidence of toxic material being dumped or drained into the area. It requires investigation beyond the scope of this preliminary assessment.

b. OEW. There are at least eleven identified bomb impact sites on the island and adjacent cayos that are dangerous and still contain visible unexploded bombs. It requires investigation beyond the scope of this preliminary assessment.

AVAILABLE STUDIES AND REPORTS: None identified.

23 >

PA POC: Ivan Acosta, CESAJ-PD-EE, 904-791-2117 is the District POC.





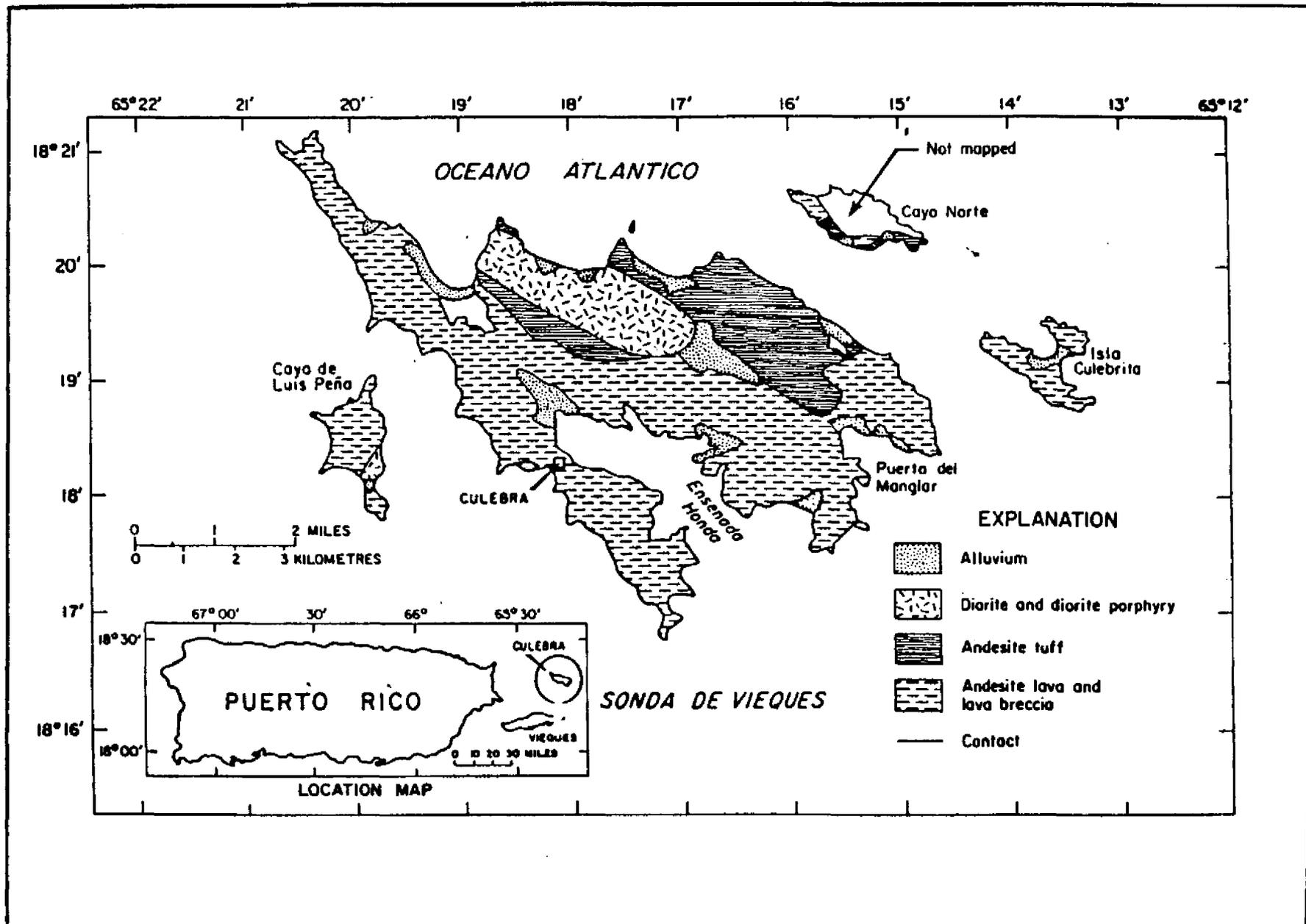


Figure 7. Generalized Geology of Culebra Island and Outlying Islands (after Jordan and Gilbert 1976:Figure 8).

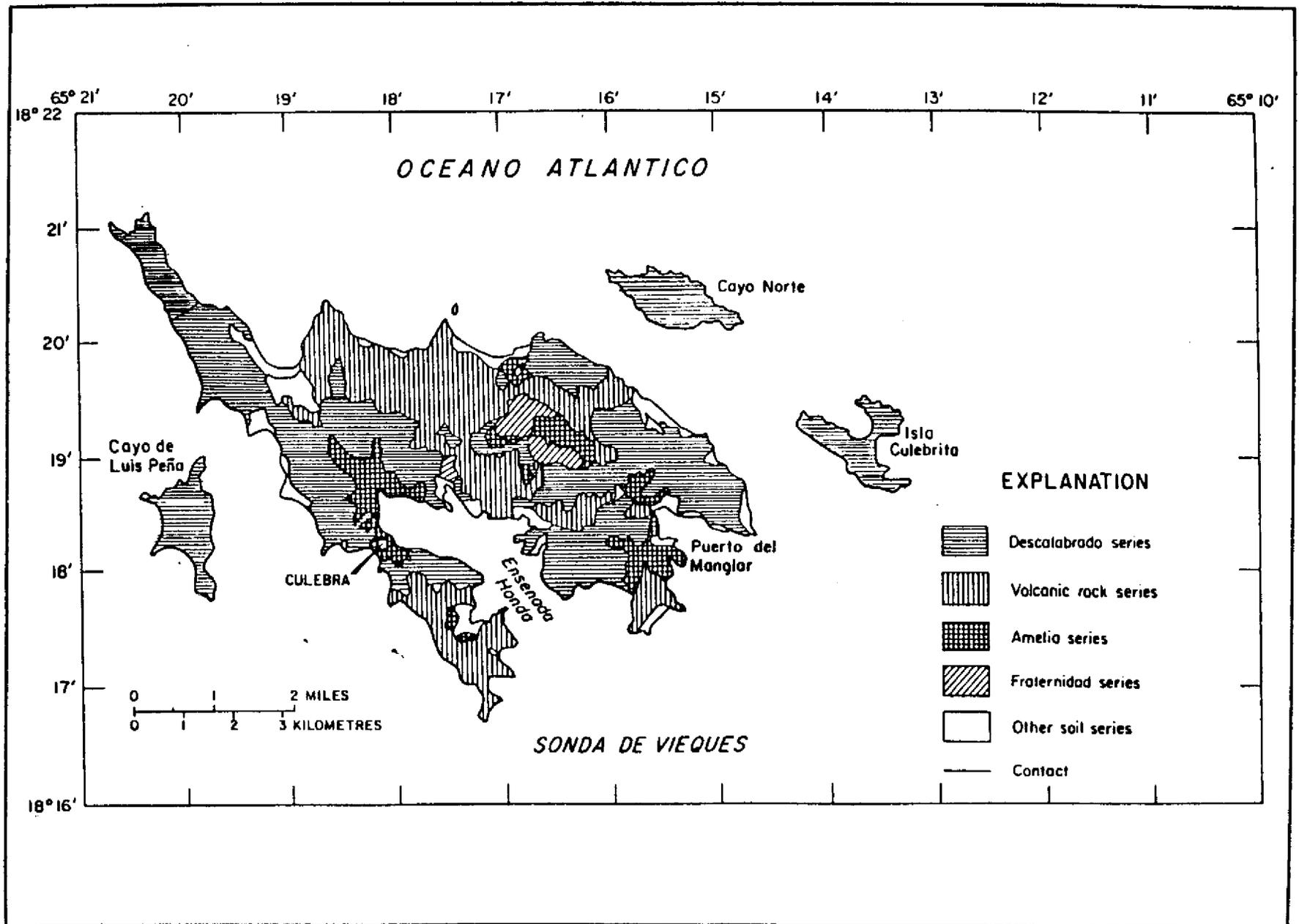
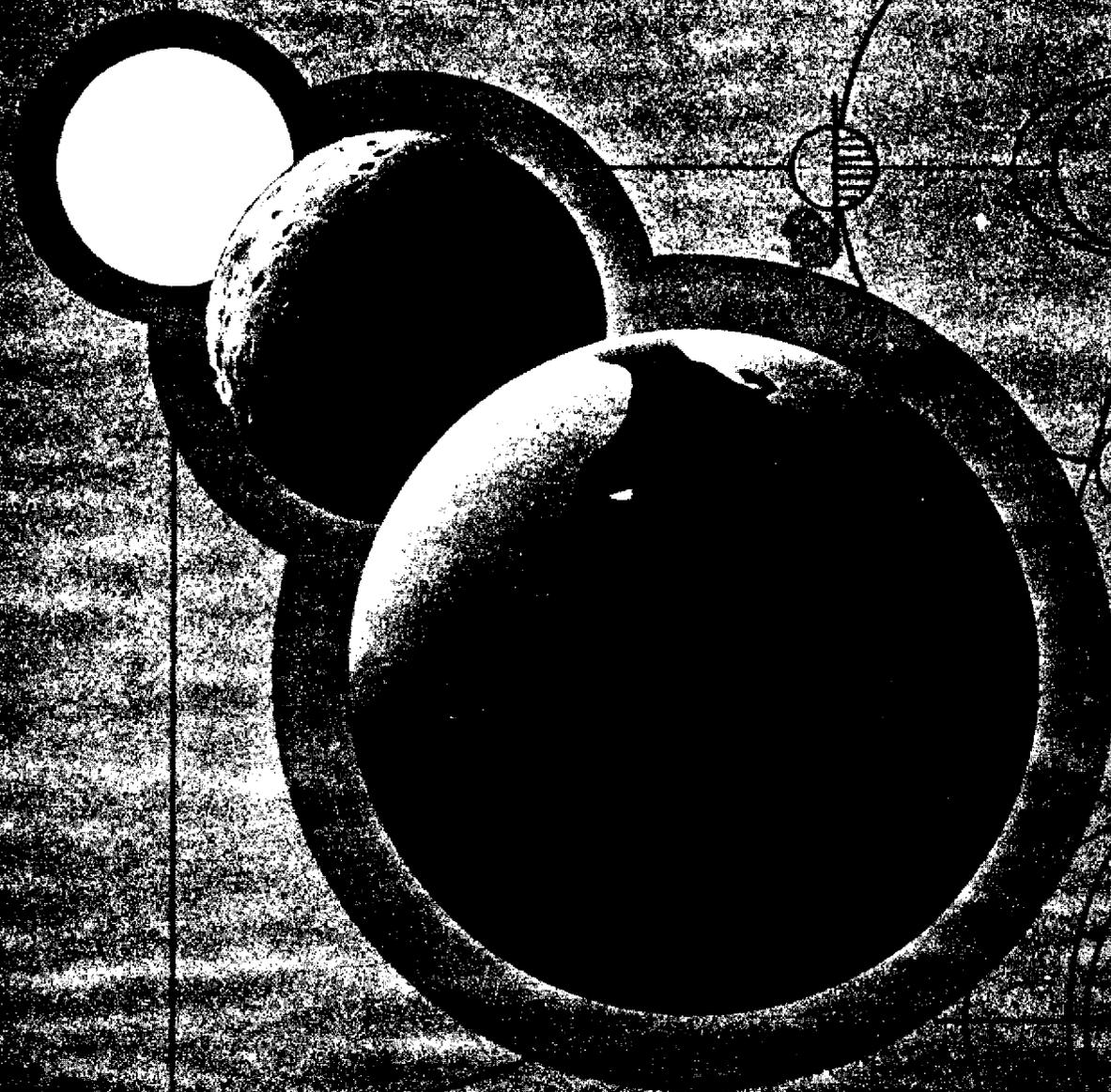


Figure 8. Major Soil Series of Culebra Island (after Jordan and Gilbert 1976:Figure 7).

NOAA Chart 1923 (1974) (1:100,000)

# East Coast of North and South America including Greenland



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Ocean Service

TABLE 2 - TIDAL DIFFERENCES AND OTHER CONSTANTS

No.	PLACE	POSITION		DIFFERENCES				RANGES		Mean Tide Level	
		Latitude	Longitude	Time		Height		Mean	Spring		
				High Water	Low Water	High Water	Low Water				
	WEST INDIES—cont. Cuba—cont. Time meridian, 75° W	North	West	h	m	ft	ft	ft	ft	ft	
				on Key West, p.120							
4541	Bahia Honda	22° 58'	83° 13'	-1 04	-0 23	+0.76	+0.76	1.0	1.4	0.7	
4543	Havana	23° 09'	82° 20'	-0 48	-0 40	+0.76	+0.76	1.0	1.2	0.6	
4545	Matanzas	23° 04'	81° 32'	-0 59	-0 59	+0.92	+0.92	1.2	1.5	0.8	
4547	Cardenas	23° 04'	81° 12'	-0 11	+0 34	+1.08	+1.08	1.4	1.8	1.0	
	Jamaica			on Galveston, p.140						Mean Diurnal	
4549	Port Morant	17° 53'	76° 20'	-7 45	-7 45	+0.57	+0.57	--	0.8	0.4	
4551	Port Royal †	17° 56'	76° 51'	-7 07	-8 14	+0.50	+0.50	--	0.7	0.3	
4553	Galeon Harbour	17° 54'	77° 04'	--	--	--	--	--	0.8	0.4	
4555	South Negril Point †	18° 18'	78° 24'	-2 47	-2 47	+1.21	+1.21	--	1.7	0.8	
4557	Montego Bay	18° 28'	77° 55'	-6 44	-6 40	+0.71	+0.71	--	1.0	0.5	
4559	St. Ann's Bay	18° 25'	77° 14'	-7 17	-7 17	+0.57	+0.57	--	0.8	0.4	
4561	Grand Cayman †	19° 20'	81° 20'	-8 01	-8 01	+0.93	+0.93	--	1.3	0.6	
	Haiti and Dominican Republic			on San Juan, p.152							
4563	Port-au-Prince	18° 33'	72° 21'	-0 35	-0 38	+0.99	+0.99	--	1.6	0.8	
4565	Massacre, Riviere du entrance	19° 43'	71° 46'	-1 04	-1 07	+1.44	+1.44	--	2.3	1.2	
4567	Puerto Plata	19° 49'	70° 42'	-1 12	-1 20	+1.44	+1.44	--	2.3	1.2	
4569	Santa Barbara de Samana	19° 12'	69° 20'	-0 54	-0 53	+1.25	+1.25	--	2.0	1.0	
4571	Sanchez	19° 13'	69° 36'	-0 40	-0 43	+2.05	+2.05	--	3.3	1.6	
				on Galveston, p.140							
4573	Seona, Isla †	18° 10'	68° 40'	--	--	--	--	--	0.6	0.3	
4575	La Romana †	18° 25'	68° 57'	--	--	--	--	--	0.6	--	
4577	Santo Domingo †	18° 27'	69° 53'	-8 28	-11 01	+0.57	+0.57	--	0.8	0.4	
4579	Barahona †	18° 12'	71° 05'	--	--	--	--	--	0.7	0.3	
4581	Jacmel †	18° 13'	72° 34'	-10 00	-10 00	+1.43	+1.43	--	2.0	1.0	
	Puerto Rico Time meridian, 60° W										
4583	Magueyes Island †	17° 58'	67° 03'	-6 37	-10 24	+0.50	+0.50	--	0.7	0.4	
4585	Guanica †	17° 58'	66° 55'	-7 57	-10 14	+0.50	+0.50	--	0.7	0.3	
4587	Playa de Ponce †	17° 58'	66° 37'	-7 14	-10 45	+0.57	+0.57	--	0.8	0.4	
4589	Playa Cortada †	17° 59'	66° 27'	-6 57	-11 09	+0.57	+0.57	--	0.8	0.4	
4591	Arroyo †	17° 58'	66° 04'	-5 43	-10 19	+0.57	+0.57	--	0.8	0.4	
4593	Puerto Maunabo †	18° 00'	65° 53'	-7 31	-9 19	+0.50	+0.50	--	0.7	0.4	
4595	Culebrita, Isla †	18° 19'	65° 14'	-9 09	-7 52	+0.79	+0.79	--	1.1	0.6	
4597	Puerto Ferro, Isla de Vieques †	18° 06'	65° 26'	-9 01	-7 31	+0.57	+0.57	--	0.8	0.4	
				on San Juan, p.152							
4599	Punta Mulas, Isla de Vieques	18° 09'	65° 26'	-0 14	-0 17	+0.72	+0.72	--	1.2	0.6	
4601	Roosevelt Roads	18° 14'	65° 37'	+0 02	+0 20	+0.63	+0.63	--	1.0	0.5	
4603	Ensenada Honda, Culebra Island	18° 18'	65° 17'	-0 34	-0 15	+0.63	+0.63	--	1.0	0.5	
4605	Playa de Fajardo	18° 20'	65° 38'	-0 10	-0 13	+0.99	+0.99	--	1.6	0.8	
4607	SAN JUAN	18° 28'	66° 01'	Daily predictions				--	1.6	0.8	
4609	Mayaguez	18° 13'	67° 09'	-0 30	-0 21	+0.99	+0.99	--	1.6	0.8	
4611	Puerto Real	18° 05'	67° 11'	-0 33	-0 26	+0.72	+0.72	--	1.2	0.6	
	Lesser Antilles										
4613	Virgin Islands Magens Bay, St. Thomas Island	18° 22'	64° 55'	-0 16	-0 07	+0.69	+0.69	--	1.4	0.7	
				on Galveston, p.140							
4615	Charlotte Amalie, St. Thomas Island †	18° 20'	64° 56'	-8 12	-8 16	+0.57	+0.57	--	0.8	0.4	
4617	Christiansted, St. Croix Island †	17° 45'	64° 42'	-9 17	-9 23	+0.57	+0.57	--	0.8	0.4	
4619	St. Barthelémy †	17° 54'	62° 51'	-10 00	-9 18	+1.00	+1.00	--	1.4	0.7	
4621	Parham, Antigua	17° 06'	61° 48'	--	--	--	--	--	0.9	0.4	
4623	Pointe-a-Pitre, Guadeloupe	16° 14'	61° 32'	-12 02	-12 02	+0.71	+0.71	--	1.0	0.5	
				on Key West, p.120							
4625	Roseau, Dominica	15° 18'	61° 24'	-6 29	-6 05	+0.65	+0.65	0.7	1.2	0.6	
4627	Fort-de-France, Martinique	14° 35'	61° 03'	-6 55	-6 18	+0.38	+0.38	0.5	--	0.5	
4629	Castries, St. Lucia	14° 01'	61° 00'	-7 09	-7 05	+0.62	+0.62	0.8	1.2	0.6	
4631	Vieux Fort Bay, St. Lucia	13° 44'	60° 58'	-6 02	-5 38	+0.69	+0.69	0.9	--	0.7	
				on Cristobal, p.148							
4633	Kingstown, St. Vincent <15>	13° 10'	61° 13'	-7 09	-6 38	+1.53	+1.53	2.0	2.7	1.4	
4635	Bridgetown, Barbados	13° 06'	59° 38'	-6 28	-5 47	+1.30	+1.30	1.7	2.1	1.0	
4637	Grenada	12° 04'	61° 45'	-7 28	-6 51	+0.92	+0.92	1.2	1.5	0.8	
4639	Scarborough, Tobago	11° 11'	60° 44'	-6 40	-6 22	+1.60	+1.60	2.1	2.7	1.4	
4641	Schoteloep, Curacao †	12° 07'	68° 56'	+0 25	+1 09	+0.82	+0.82	--	0.9	0.5	
4643	St. Nicolaas Bay, Aruba †	12° 26'	69° 54'	--	--	--	--	--	0.8	0.4	

Endnotes can be found at the end of table 2.

# Galveston (Galveston Channel), Texas, 1994

## Times and Heights of High and Low Waters

January				February				March																					
Time	Height			Time	Height			Time	Height			Time	Height																
	h	m	ft	cm		h	m	ft	cm		h	m	ft	cm		h	m	ft	cm										
<b>1</b> Sa	0014	0.8	24		<b>16</b> Su	0107	0.3	9		<b>1</b> Tu	0128	-0.1	-3		<b>16</b> W	0134	0.0	0		<b>1</b> Tu	0712	1.0	30		<b>16</b> W	0740	1.0	30	
	0421	0.9	27			0631	0.6	18			0821	0.7	21			0912	0.7	21			1221	0.5	15			1204	0.8	24	
	1159	-0.4	-12			1238	0.0	0			1310	0.3	9			1242	0.6	18			1753	1.0	30			1708	1.0	30	
	1949	1.1	34			1948	0.8	24			1924	0.8	24			1845	0.8	24											
<b>2</b> Su	0110	0.6	18		<b>17</b> M	0201	0.2	6		<b>2</b> W	0233	-0.3	-9		<b>17</b> Th	0230	-0.1	-3		<b>2</b> W	0058	-0.3	-9		<b>17</b> Th	0038	0.1	3	
	0551	0.8	24			0754	0.5	15			1013	0.7	21			1821	0.8	24			0842	1.0	30			0853	1.0	30	
	1242	-0.2	-6			1304	0.2	6			1355	0.6	18			1308	0.7	21			1308	0.7	21			1225	0.9	27	
	2014	1.0	30			2009	0.7	21			1944	0.8	24			1813	1.0	30			1813	1.0	30			1650	1.0	30	
<b>3</b> M	0211	0.4	12		<b>18</b> Tu	0300	0.1	3		<b>3</b> Th	0344	-0.5	-15		<b>18</b> F	0334	-0.1	-3		<b>3</b> Th	0201	-0.4	-12		<b>18</b> F	0127	0.1	3	
	0742	0.7	21			0935	0.5	15			1220	0.8	24			1751	0.9	27			1025	1.0	30			1023	1.0	30	
	1327	0.1	3			1324	0.4	12			1450	0.7	21			0					1404	0.9	27			1247	0.9	27	
	2037	0.9	27			2026	0.7	21			2003	0.9	27			0					1830	1.0	30			1634	1.1	34	
<b>4</b> Tu	0315	0.1	3		<b>19</b> W	0400	0.0	0		<b>4</b> F	0456	-0.6	-18		<b>19</b> Sa	0441	-0.2	-6		<b>4</b> F	0315	-0.4	-12		<b>19</b> Sa	0224	0.1	3	
	0944	0.6	18			2038	0.7	21			1416	0.9	27			1750	0.9	27			1219	1.1	34			1635	1.1	34	
	1416	0.4	12			0					1858	0.8	24			0					0					0			
	2059	0.9	27			0					2029	0.9	27			0					0					0			
<b>5</b> W	0418	-0.2	-6		<b>20</b> Th	0457	-0.1	-3		<b>5</b> Sa	0804	-0.7	-21		<b>20</b> Su	0541	-0.2	-6		<b>5</b> Sa	0434	-0.4	-12		<b>20</b> Su	0330	0.1	3	
	1147	0.7	21			2039	0.8	24			1511	1.0	30			1531	0.9	27			1345	1.1	34			1628	1.1	34	
	1516	0.6	18			0					0				0						0					0			
	2121	0.9	27			0					0				0						0					0			
<b>6</b> Th	0518	-0.4	-12		<b>21</b> F	0547	-0.3	-9		<b>6</b> Su	0705	-0.8	-24		<b>21</b> M	0632	-0.3	-9		<b>6</b> Su	0550	-0.4	-12		<b>21</b> M	0438	0.0	0	
	1338	0.9	27			1902	0.8	24			1545	1.0	30			1514	1.0	30			1429	1.1	34			1338	1.2	37	
	1647	0.8	24			0					2046	0.8	24			1954	0.8	24			1959	0.9	27			0			
	2146	0.9	27			0					2328	0.9	27			2232	0.9	27			2231	1.0	30			0			
<b>7</b> F	0618	-0.8	-18		<b>22</b> Sa	0631	-0.4	-12		<b>7</b> M	0759	-0.8	-24		<b>22</b> Tu	0718	-0.4	-12		<b>7</b> M	0656	-0.4	-12		<b>22</b> Tu	0541	0.0	0	
	1455	1.0	30			1618	0.9	27			1812	1.0	30			1528	1.0	30			1457	1.1	34			1357	1.2	37	
	1911	0.9	27			0					2105	0.8	24			1948	0.9	27			2016	0.8	24			1901	1.0	30	
	2222	1.0	30			0					0				0						0					2257	1.1	34	
<b>8</b> Sa	0710	-0.8	-24		<b>23</b> Su	0711	-0.5	-15		<b>8</b> Tu	0043	0.9	27		<b>23</b> W	0008	1.0	30		<b>8</b> Tu	0000	1.0	30		<b>23</b> W	0638	0.0	0	
	1550	1.1	34			1802	0.9	27			0847	-0.7	-21			0801	-0.4	-12			0751	-0.3	-9			1416	1.2	37	
	2037	0.9	27			2030	0.8	24			1835	0.9	27			1546	1.0	30			1519	1.0	30			1914	0.9	27	
	2316	1.0	30			2238	0.9	27			2125	0.7	21			2018	0.8	24			2036	0.7	21			0			
<b>9</b> Su	0802	-0.9	-27		<b>24</b> M	0749	-0.6	-18		<b>9</b> W	0148	0.9	27		<b>24</b> Th	0120	1.0	30		<b>9</b> W	0112	1.0	30		<b>24</b> Th	0029	1.2	37	
	1632	1.1	34			1619	1.0	30			0929	-0.6	-18			0843	-0.4	-12			0838	-0.2	-6			0730	0.1	3	
	2118	0.9	27			2024	0.8	24			1656	0.9	27			1607	1.0	30			1537	1.0	30			1435	1.2	37	
						2355	0.9	27			2150	0.6	18			2054	0.6	18			2057	0.6	18			1947	0.7	21	
<b>10</b> M	0020	1.0	30		<b>25</b> Tu	0827	-0.7	-21		<b>10</b> Th	0247	0.9	27		<b>25</b> F	0227	1.1	34		<b>10</b> Th	0214	1.1	34		<b>25</b> F	0143	1.3	40	
	0850	-0.9	-27			1841	1.0	30			1007	-0.5	-15			0926	-0.3	-9			0918	-0.1	-3			0820	0.2	6	
	1708	1.1	34			2052	0.8	24			1716	0.8	24			1628	1.0	30			1553	1.0	30			1455	1.2	37	
	2149	0.9	27			0					2218	0.4	12			2135	0.4	12			2119	0.5	15			2028	0.4	12	
<b>11</b> Tu	0122	1.0	30		<b>26</b> W	0058	0.9	27		<b>11</b> F	0342	0.9	27		<b>26</b> Sa	0333	1.1	34		<b>11</b> F	0309	1.1	34		<b>26</b> Sa	0252	1.4	43	
	0936	-0.9	-27			0905	-0.7	-21			1041	-0.3	-9			1009	-0.2	-6			0953	0.1	3			0909	0.3	9	
	1740	1.0	30			1705	1.0	30			1735	0.8	24			1649	1.0	30			1609	0.9	27			1516	1.1	34	
	2220	0.8	24			2127	0.8	24			2250	0.3	9			2219	0.2	6			2144	0.4	12			2108	0.2	6	
<b>12</b> W	0222	1.0	30		<b>27</b> Th	0159	0.9	27		<b>12</b> Sa	0437	0.8	24		<b>27</b> Su	0441	1.1	34		<b>12</b> Sa	0401	1.1	34		<b>27</b> Su	0359	1.4	43	
	1018	-0.8	-24			0944	-0.7	-21			1111	-0.1	-3			1053	0.0	0			1024	0.2	6			0957	0.5	15	
	1809	1.0	30			1730	1.0	30			1755	0.8	24			1711	0.9	27			1628	0.9	27			1537	1.2	37	
	2255	0.7	21			2208	0.6	18			2325	0.2	6			2307	0.0	0			2212	0.3	9			2154	0.0	0	
<b>13</b> Th	0321	0.9	27		<b>28</b> F	0301	0.9	27		<b>13</b> Su	0534	0.8	24		<b>28</b> M	0553	1.1	34		<b>13</b> Su	0452	1.1	34		<b>28</b> M	0505	1.5	46	
	1058	-0.6	-18			1023	-0.6	-18			1139	0.0	0			1137	0.3	9			1051	0.4	12			1045	0.7	21	
	1837	0.9	27</																										



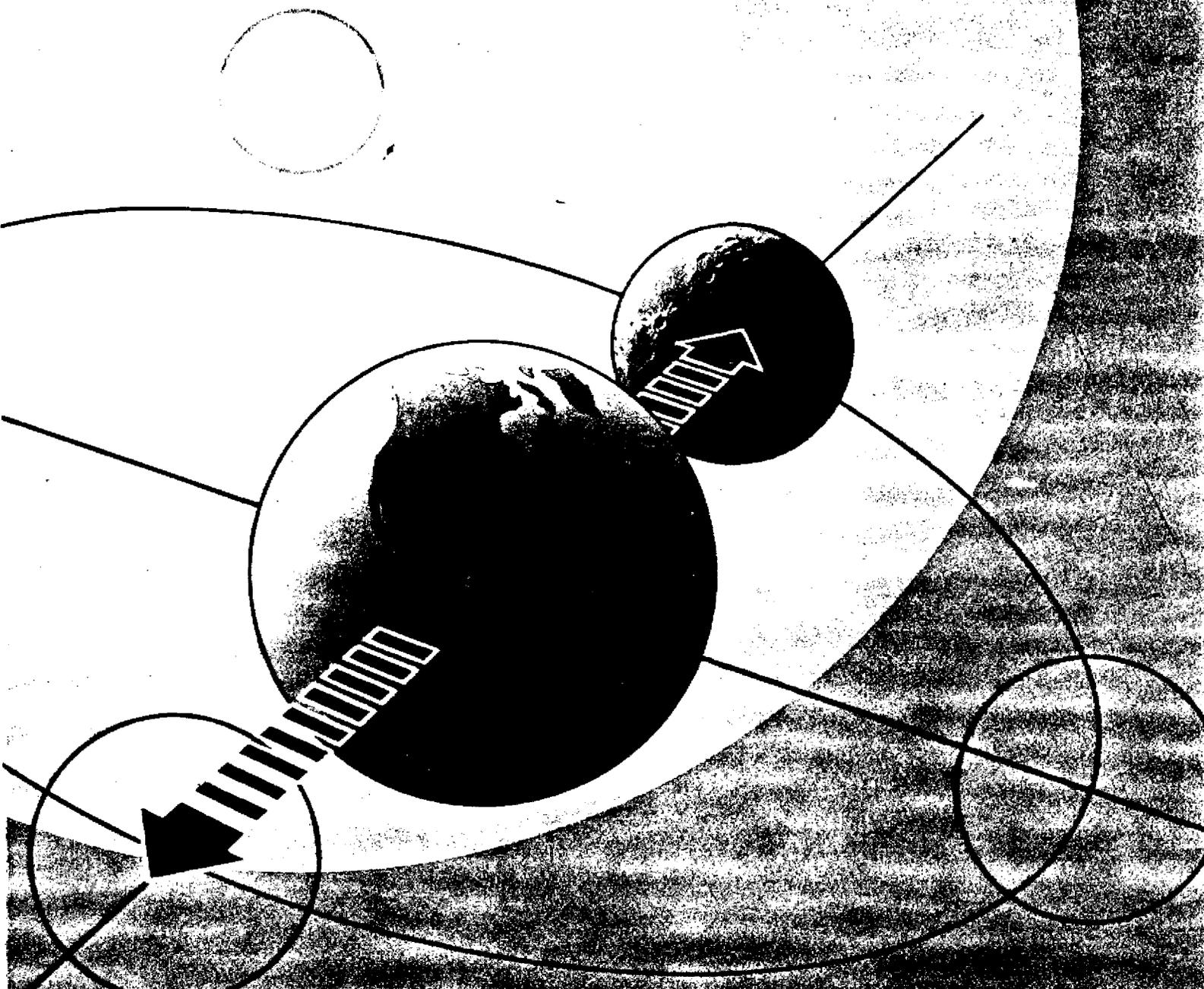




Tidal Current Tables 1994



# Atlantic Coast of North America



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Ocean Service

TABLE 2 - CURRENT DIFFERENCES AND OTHER CONSTANTS

No.	PLACE	Meter Depth	POSITION		TIME DIFFERENCES				SPEED RATIOS		AVERAGE SPEEDS AND DIRECTIONS									
			Latitude	Longitude	Min. before Flood	Flood	Min. before Ebb	Ebb	Flood	Ebb	Minimum before Flood		Maximum Flood		Minimum before Ebb		Maximum Ebb			
											h	m	h	m	h	m	knots	Dir.	knots	Dir.
	<b>GALVESTON BAY</b> Time meridian, 90° W	ft	North	West	h	m	h	m	h	m										
					on Galveston Bay Entrance, p.84															
					Daily predictions															
8566	GALVESTON BAY ENT. (between jetties) .....		29° 20.8'	94° 42.3'							1.0	0.8	0.0	--	1.7	299°	0.0	--	2.3	102°
8571	Bolivar Roads, 0.5 ml. N of Ft. Point .....		29° 20.8'	94° 46.1'	+0 25	+0 26	+1 15	+0 14			0.0	--	1.7	287°	0.0	--	1.8	111°		
8576	Quarantine Station, 0.3 mile S of <27> .....		29° 19.8'	94° 46.7'	--	-1 21	--	-0 59			0.8	0.4	0.0	--	1.1	196°	0.0	--	0.8	009°
8581	Galveston Channel, west end <27> .....		29° 18.6'	94° 49.2'	--	+0 01	--	-0 17			1.0	0.6	0.0	--	1.7	272°	0.0	--	1.5	103°
8586	Galveston Causeway RR. bridge .....		29° 17.60'	94° 53.13'	-0 24	-0 32	--	+0 05			0.4	0.4	0.0	--	0.7	210°	0.0	--	0.8	025°
8591	Houston Channel, W of Port Bolivar .....		29° 21.8'	94° 47.8'	+0 18	+0 35	+1 18	+0 24			0.8	0.8	0.0	--	1.3	330°	0.0	--	1.4	166°
8596	Houston Ship Channel (Red Fish Bar) .....		29° 30.2'	94° 52.5'	+3 11	+1 51	+0 12	+1 29			0.8	0.8	0.0	--	1.3	321°	0.0	--	1.8	146°
	<b>TEXAS COAST</b>																			
8601	Matagorda Channel (entrance jetty) .....		26° 25.3'	96° 19.4'	-0 58	-0 28	-0 18	-1 14			1.2	0.8	0.0	--	2.0	317°	0.0	--	1.8	142°
8606	Aranas Pass .....		27° 50.1'	97° 02.65'	+0 34	+1 03	+0 50	-0 08			0.5	0.5	0.0	--	0.9	312°	0.0	--	1.2	116°
8611	Sabine Bank <54> .....		29° 18.20'	94° 00.20'	--	--	--	--			--	--	--	--	--	--	--	--	--	--
8616	Heald Bank, 26 miles SSE of <54> .....		28° 40.17'	93° 59.60'	--	--	--	--			--	--	--	--	--	--	--	--	--	--
	<b>PUERTO RICO</b> Time meridian, 60° W				on Vieques Passage, p.88															
8621	Punta Ostiones, 1.5 miles west of .....		18° 05.2'	67° 13.6'	-0 26	-0 52	-0 04	-0 35			1.7	1.3	0.0	--	1.0	187°	0.0	--	0.9	001°
8626	VIEQUES PASSAGE .....		18° 11.3'	65° 37.1'	Daily predictions						0.0	--	0.6	250°	0.0	--	0.7	057°		
8631	Vieques Sound .....		18° 15.67'	65° 34.20'	-0 44	-1 16	-1 28	-1 05			0.7	0.9	0.0	--	0.4	180°	0.0	--	0.6	355°
8636	Largo Shoals, west of .....		18° 19'	65° 35'	-0 52	-1 28	-1 33	-1 08			0.7	1.0	0.0	--	0.4	186°	0.0	--	0.7	330°
8641	Ramos Cay, 0.3 mile SE of <1> .....		18° 18.6'	65° 36.4'	--	-0 42	--	-0 44			0.3	0.1	0.0	--	0.2	120°	0.0	--	0.1	284°
8646	Palominos Island, 0.9 mile SW of <13> .....		18° 20.1'	65° 34.8'	--	--	--	-0 48			--	0.7	--	--	--	--	--	--	0.5	307°
8651	Fajardo Harbor (channel) .....		18° 20'	65° 37'	-1 13	-1 52	-2 27	-1 45			0.5	1.6	0.0	--	0.3	162°	0.0	--	1.1	339°
8656	Isla Marina, 0.2 mile west of <1> <13> .....		18° 20.50'	65° 37.38'	--	--	--	-2 06			--	1.0	--	--	--	--	--	--	0.7	335°
8661	Coronala Laja, 0.4 mile NW of <1> <13> .....		18° 21.6'	65° 37.3'	--	--	--	-1 33			--	0.4	--	--	--	--	--	--	0.3	000°
8666	Pasejo de San Juan <1> <13> .....		18° 23.9'	65° 36.9'	--	--	--	-1 15			--	1.7	--	--	--	--	--	--	1.2	310°
8671	Bahia de San Juan .....		18° 27.23'	66° 06.8'	Current weak and variable						--	--	--	--	--	--	--	--	--	--
8676	Bahia de San Juan entrance <50> .....		18° 28.3'	66° 07.6'	--	--	--	--			--	--	--	--	--	--	--	--	--	--

Endnotes can be found at the end of table 2.





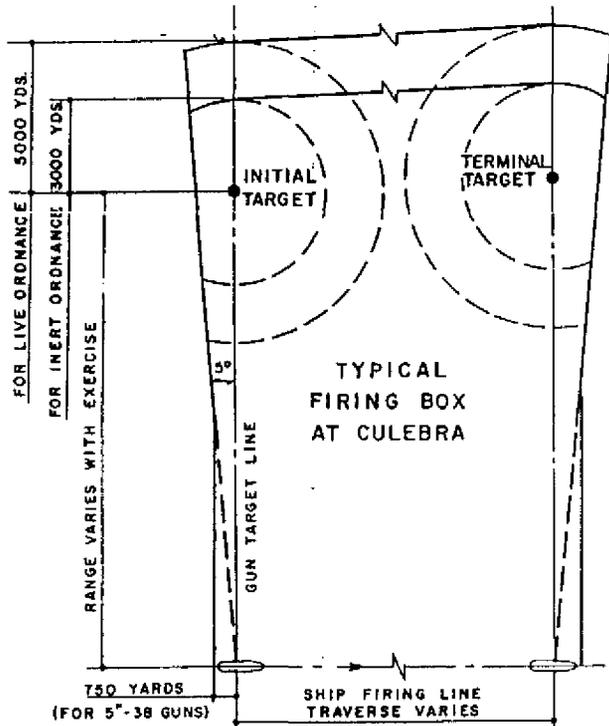


## Vieques Passage, Puerto Rico, 1994

F—Flood, Dir. 250° True E—Ebb, Dir. 055° True

October				November				December							
Slack		Maximum		Slack		Maximum		Slack		Maximum		Slack		Maximum	
	h m	h m	knots		h m	h m	knots		h m	h m	knots		h m	h m	knots
1				16				1				16			
Sa	0441	0737	0.5F	Su	0523	0837	0.7F	Tu	0507	0833	0.8F	W	0548	0925	0.7F
	1037	1344	0.5E		1148	1503	0.7E		1148	1511	0.9E		1243	1613	0.8E
	1649	1952	0.5F		1829	2111	0.5F		1648	2125	0.5F		2008	2231	0.4F
	2250				2359										
2				17				2				17			
Su	0522	0824	0.6F	M	0604	0922	0.7F	W	0010	0308	0.6E	Th	0112	0355	0.4E
	1127	1439	0.6E		1234	1553	0.7E		0554	0923	0.9F		0826	1004	0.7F
	1753	2049	0.6F		1925	2203	0.4F		1238	1604	1.0E		1320	1654	0.8E
	2346								1945	2221	0.6F		2048	2316	0.4F
3				18				3				18			
M	0602	0911	0.7F	Tu	0641	1003	0.7F	Th	0108	0400	0.6E	F	0201	0438	0.3E
	1216	1532	0.8E		1315	1638	0.8E		0642	1013	1.0F		0704	1042	0.7F
	1853	2144	0.6F		2015	2251	0.4F		1328	1656	1.1E		1356	1732	0.9E
									2038	2315	0.6F		2127	2358	0.4F
4				19				4				19			
Tu	0039	0344	0.7E	W	0137	0432	0.5E	F	0204	0453	0.6E	Sa	0249	0520	0.3E
	0643	0957	0.8F		0717	1042	0.7E		0733	1104	1.0F		0742	1120	0.7F
	1304	1624	0.9E		1353	1719	0.8E		1419	1747	1.1E		1432	1810	0.9E
	1951	2238	0.6F		2100	2335	0.4F		2130				2204		
5				20				5				20			
W	0131	0432	0.7E	Th	0222	0511	0.4E	Sa	0300	0008	0.6F	Su	0334	0038	0.4F
	0725	1043	0.9F		0752	1118	0.7F		0826	0547	0.6E		0823	0602	0.3E
	1353	1715	1.0E		1430	1759	0.8E		1509	1156	1.0F		1508	1158	0.7F
	2046	2330	0.6F		2142				2221	1838	1.1E		2240	1847	0.9E
6				21				6				21			
Th	0223	0519	0.7E	F	0305	0017	0.4F	Su	0356	0101	0.6F	M	0417	0117	0.4F
	0809	1131	0.9F		0827	0550	0.4E		0921	0642	0.6E		0907	0645	0.3E
	1442	1806	1.0E		1506	1155	0.7F		1600	1248	0.9F		1545	1238	0.6F
	2140				2223	1837	0.8E		2310	1929	1.1E		2314	1924	0.9E
7				22				7				22			
F	0314	0022	0.6F	Sa	0349	0058	0.4F	M	0453	0154	0.7E	Tu	0500	0156	0.5F
	0855	0608	0.7E		0903	0629	0.4E		1020	0739	0.6F		0955	0729	0.3E
	1532	1220	0.9F		1542	1232	0.7F		1652	1343	0.9F		1624	1321	0.6F
	2234	1857	1.0E		2303	1915	0.8E			2021	1.0E		2348	2003	0.8E
8				23				8				23			
Sa	0407	0114	0.6F	Su	0432	0138	0.4F	Tu	0000	0248	0.7E	W	0543	0235	0.5F
	0945	0659	0.6E		0941	0710	0.4E		0552	0838	0.6E		1050	0817	0.4E
	1624	1310	0.8F		1619	1310	0.7F		1124	1440	0.8F		1705	1407	0.6F
	2328	1949	1.0E		2342	1954	0.8E		1744	2113	0.9E			2042	0.8E
9				24				9				24			
Su	0501	0208	0.6F	M	0516	0220	0.4F	W	0048	0342	0.7F	Th	0021	0315	0.5F
	1038	0753	0.6E		1024	0753	0.4E		0651	0941	0.6E		0627	0908	0.4E
	1717	1403	0.9F		1659	1352	0.6F		1232	1539	0.6F		1151	1457	0.5F
									1838	2206	0.9E		1750	2124	0.7E
10				25				10				25			
M	0022	0303	0.6F	Tu	0021	0302	0.4F	Th	0135	0437	0.7F	F	0055	0357	0.6F
	0558	0850	0.6E		0602	0839	0.4E		0751	1045	0.6E		0712	1002	0.5E
	1136	1459	0.8F		1113	1436	0.6F		1345	1642	0.5F		1259	1553	0.5F
	1811	2138	0.9E		1741	2117	0.6E		1933	2300	0.8E		1838	2209	0.7E
11				26				11				26			
Tu	0116	0400	0.6F	W	0101	0348	0.5F	F	0222	0531	0.7F	Sa	0131	0442	0.6E
	0658	0951	0.5E		0649	0930	0.4E		0848	1149	0.6E		0800	1100	0.5E
	1240	1559	0.7F		1209	1526	0.5F		1501	1746	0.5F		1411	1653	0.4F
	1908	2234	0.9E		1827	2202	0.7E		2030	2353	0.7E		1932	2257	0.6E
12				27				12				27			
W	0210	0459	0.6F	Th	0140	0431	0.5F	Sa	0306	0623	0.7E	Su	0209	0529	0.7E
	0801	1055	0.5E		0738	1025	0.4E		0943	1251	0.6E		0850	1159	0.6E
	1349	1702	0.6F		1313	1621	0.5F		1615	1851	0.4F		1524	1756	0.4F
	2007	2332	0.8E		1917	2249	0.7E		2128				2030	2349	0.6E
13				28				13				28			
Th	0302	0558	0.6F	F	0220	0518	0.5F	Su	0349	0048	0.6E	M	0250	0618	0.8F
	0903	1202	0.5E		0827	1123	0.5E		0941	0713	0.7F		0941	1257	0.7E
	1503	1807	0.6F		1422	1721	0.5F		1034	1349	0.7F		1634	1901	0.4F
	2107				2012	2339	0.6E		1724	1953	0.4E		2133		
14				29				14				29			
F	0352	0030	0.7E	Sa	0300	0606	0.6F	M	0431	0138	0.5E	Tu	0335	0043	0.6E
	1003	0654	0.6F		0918	1222	0.5E		1120	0800	0.7F		1032	0709	0.9F
	1616	1307	0.6E		1534	1823	0.4F		1825	1442	0.7E		1740	1355	0.8E
	2206	1912	0.5E		2111				2324	2050	0.3F		2237	2004	0.4E
15				30				15				30			
Sa	0440	0125	0.7E	Su	0340	0030	0.6E	Tu	0510	0225	0.5E	W	0424	0139	0.5E
	1058	0748	0.6F		1008	0655	0.7F		1203	0844	0.7F		1124	0802	0.9F
	1726	1408	0.6E		1643	1321	0.6E		1919	1530	0.8E		1840	1451	1.0E
	2304	2014	0.5F		2211	1926	0.5E			2143	0.4F		2341	2105	0.4F
				31								31			
				M	0423	0123	0.6E					Sa	0024	0315	0.5E
					1058	0744	0.7F						0551	0930	1.0F
					1748	1417	0.8E						1250	1620	1.1E
					2311	2027	0.5F						2009	2241	0.5F

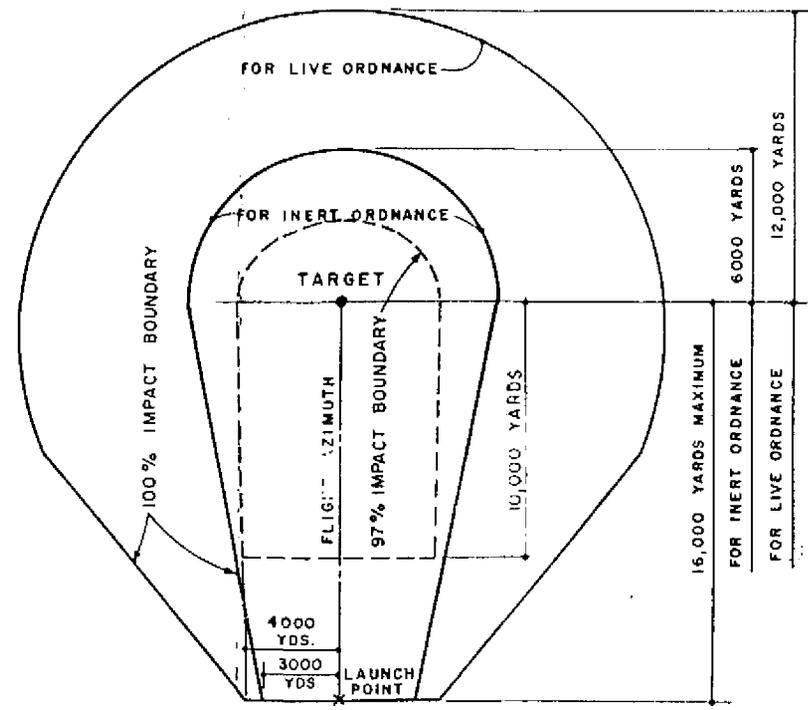
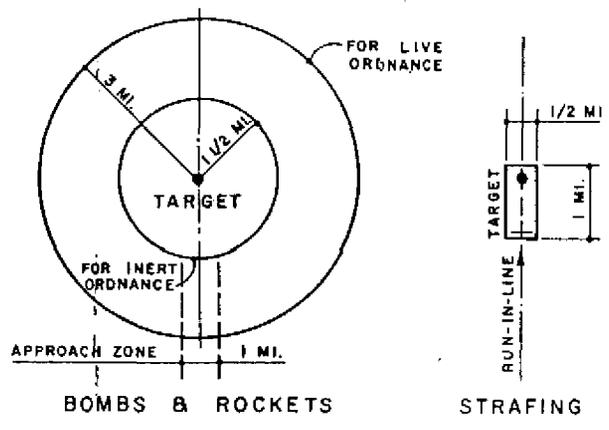
Time meridian 60° W. 0000 is midnight. 1200 is noon.



SHORE BOMBARDMENT

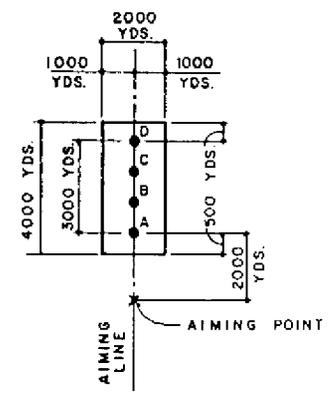
SAFETY ZONE	GUN SIZE INCHES	RADIUS (R) YARDS
	3	500
	5	750
	6	750
	8	1,000

SUPPORTING FIRE  
 AMPHIBIOUS OPERATIONS  
 NAVAL GUNFIRE



BULLPUP MISSILE  
 AIR TO SURFACE ORDNANCE

TARGETS	EXERCISE
ABCD	PARALLEL RUNS
C	PERPENDICULAR RUNS



**ATLANTIC FLEET  
INTEGRATED WEAPONS TRAINING RANGES  
(CULEBRA STUDY)**

**ANNEX II  
DETAILED REPORT ON CULEBRA COMPLEX  
AND STUDY OF ALTERNATIVES**

PREPARED FOR  
**COMMANDER IN CHIEF U. S. ATLANTIC FLEET**

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16 OCTOBER 1972

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**E-7**

## CHAPTER I - THE WEAPONS RANGES AT CULEBRA

### A. INTRODUCTION

Culebra was first used for weapons firing in 1936. In 1941 a Presidential Order established the "Culebra Naval Defensive Sea Area", extending from the high-water mark to three miles offshore. Because of the remoteness of the Island from heavily traveled shipping and air lanes, its relatively small population and the favorable topographic features of the Northwest Peninsula and cays surrounding the Island, the area was among the rare locations suitable for the increased training needs of the Atlantic Fleet during the 1950's and 1960's to provide a greater degree of fleet readiness required because of international conditions. The range facilities and activities consequently were expanded, reaching a peak in 1969 coincident with the demands imposed by the Vietnam conflict. Since then, range activities have diminished, and in response to requests by the civilian population, the use of certain ranges has been discontinued and others have been modified to minimize disturbances, particularly aircraft noise, and restrictions to movement of fishing vessels. In addition, inert ordnance is now used for all naval gunfire and the majority of aircraft exercises in lieu of the live round firing predominant in 1969. Nevertheless, certain groups in Puerto Rico have been agitating for removal of the ranges. Parenthetically it may be noted that there has only been one injury to a civilian recorded in the history of the range. This occurred when a civilian entered the range area without authorization and suffered loss of an arm, which was claimed to have been caused by detonation of unexploded ordnance. There were several

incidents because of gross errors in naval gunfire when inert shells damaged civilian property, but no personal injuries were suffered.

In 1971, however, it became apparent that an objective examination of the situation was necessary. In response to requests by the Congress, a series of studies were initiated by the Department of Defense to analyze the feasibility of relocating the weapons ranges at Culebra and the studies presented in this report have been made as part of the overall analysis of the problem.

## B. CULEBRA TARGET COMPLEX

### 1. Interrelation of Culebra and Atlantic Fleet Weapons Ranges

The target complex at Culebra and nearby cays is located approximately 18 miles eastward of the Naval Station at Roosevelt Roads on the main island of Puerto Rico (Plate 1). The complex is part of a system of weapons ranges in the Caribbean Area serving the training needs of the Atlantic Fleet, and at times other branches of the Armed Forces of the United States and naval units of allied countries. The system of ranges consists of (1) the Inner Range, used for shore bombardment, air to ground bombing, strafing, rocket firing and missile firing; and (2) the Outer Range, used for fleet exercises and areas therein designated as the Alfa Range in the Atlantic Ocean and Bravo Range in the Caribbean Sea, used for missile firing (Plate 1). The Inner Range consists of the target complex at Culebra and its nearby cays and weapons ranges at the eastern end of the Island of Vieques. Also located on Vieques are maneuver areas and weapons ranges for Fleet Marine Force amphibious landing and close-air support training exercises.

The indicated Inner and Outer Ranges are operated by the Atlantic Fleet Weapons Range (AFWR) organization commanded by CINCLANTFLT through COMNAVAIRLANT headquarters in Norfolk, Virginia and COMFAIRCARIB in Puerto Rico. The AFWR control center is located at the Roosevelt Roads Naval Station, from which command and control and logistic support is provided for operations in all the ranges. Support activities include basing and arming of vessels and aircraft assigned for weapons training at the ranges, launching of drone targets for aircraft firing exercises, towing of targets for ship firing exercises, and transportation of personnel, supplies and materials between the various range installations. A communications network, consisting of microwave relay stations at Roosevelt Roads, Vieques, Culebra, Luis Pena Cay near Culebra, and St. Thomas and St. Croix in the Virgin Islands, provides for control and coordination of operations in the Outer and Inner Ranges.

A major fleet exercise, designated as SPRINGBOARD, is conducted once a year over periods extending from 6 to 12 weeks in the Outer Range. During the SPRINGBOARD exercises, ships and aircraft are from time to time detached from maneuvers at sea and assigned to conduct shore bombardment, strafing and mine laying at Culebra. There is, therefore, an interrelationship between fleet exercises and the Weapons Training exercises at Culebra. Ship, air and Marine exercises at Vieques Island also bear on each other, not only during amphibious landing and close-air support training but also in the need for assignment of target impact zones. This is particularly true when intensive use is made of the target complex at Culebra during SPRINGBOARD exercises. The interrelationship of the various exercises at Vieques is further discussed in Chapter III.

Description of the Culebra target complex, encompassing Culebra and its nearby cays, use of the complex and other factors pertinent to development of plans for relocation of range facilities follow:

## 2. Culebra Target Areas

In 1969, the Culebra Complex consisted of nine target areas, shown on Plate 2, used for weapons exercises as follows:

<u>Location</u>	<u>Primary Weapons Exercises</u>
Culebra Northwest Peninsula	Naval gunfire
Fungy Bowl	Aircraft bombing and rocket fire
Twin Rocks	Aircraft bombing, rocket fire and BULLPUP air-to-surface missiles
Agua Cay	Aircraft bombing and rocket fire
Culebrita Island	Aircraft strafing
Shark Rock	Aircraft dive bombing and rocket fire
Palada Cays	Aircraft dive bombing and rocket fire
Ladrone Cay	Aircraft dive bombing and rocket fire
South of Culebra	<u>Aerial mining</u> (West)

Aircraft bombing, rocket fire and strafing exercises conducted prior to 1969 on the Northwest Peninsula, have been discontinued. Earlier, there was also a submarine torpedo range at Mark Point, the northwest end of Culebrita Island, but it was not used in 1969 nor since then. An additional aerial mining range, Aerial Mining East, planned near Culebrita Island has never been used.

After 1969, use of the impact zones at Agua Cay, Culebrita Island, Shark Rock, Palada Cays, Ladrone Cay and the West Aerial Mining Range have been discontinued. The target at Agua Cay is being relocated to Cross Cay, which lies about two nautical miles to the northwest. The flight path for aircraft exercises at Cross Cay has been routed further away from Culebra to minimize hazards and noise in populated areas.

The Culebra Northwest Peninsula, the only area in the Culebra target complex used for shore bombardment, extends approximately three miles southeastward from the tip of the Peninsula to a line marked by a wire fence and firebreak. Targets, consisting of white painted tanks, trucks, drums, rocks and panels, are located on the easterly slopes of the Peninsula. No moving targets are provided. Ships fire from courses eastward of the Peninsula at specific targets designated during ship exercises. Firings are observed and scored visually from an observation post and control center on a hilltop near Flamingo Point.

All of the aircraft target areas in the Culebra complex are small islands and cays, and with the exception of Culebrita Island used in 1969 for strafing runs only, the areas served as point targets for low level bombing, dive bombing and rocket firing exercises. The flight paths designated in 1969 and those in use at the present time for the afore-mentioned exercises at each of the target areas are shown on Plate 2. In addition, high and low-level radar bombing and special weapons exercises, such as loft bombing and over-the-shoulder bombing, were and are still conducted at Fungy Bowl and Twin Rocks.

Fungy Bowl, a rock outcrop approximately 300 by 700

feet and 100 feet in height, produces excellent radar reflections and consequently is favored for high and low-level radar bombing. It is also an excellent searchlight target. It is used for all types of conventional ordnance.

Twin Rocks consists of two small rock outcrops, the larger of which is 40-feet high and contains an upright 8-foot square target. It is the primary target for left and over-the-shoulder weapons delivery and is satisfactory for dive-bombing. It is the only target in the complex authorized for air-to-surface missiles, BULLPUP being the only type used in 1969.

*Cullery*  
*NIK 76*  
Aqua Cay is an islet approximately 450 feet in diameter, on which there is a target consisting of two concentric white circles of 50 and 100 foot radius with a six foot square at center. A white line is laid through the target along the normal aircraft delivery heading. The entire target can be illuminated by three lights at target center. It was used primarily for practice ordnance in 1969.

Culebrita Island, lying about one mile east of Culebra, rises to a hill 300 feet in height atop of which there is a lighthouse. Strafing targets were provided on the western side of the Island for day and night firing.

Shark Rock is an outcrop, about 300 feet in diameter, which served as a target for heavy conventional ordnance.

*Twin Rocks*  
The Palada Cays are two adjoining rock outcrops approximately 1,800 feet long and 300 feet wide, each rising to about 75 feet in height. They served as targets for heavy conventional ordnance. *man*

Ladrone Cay is about 600 feet long, 300 feet wide and

30 feet high, and is marked with three concentric circles of 41, 82 and 125 feet in diameter with a six-foot square at their center. A white line through the center of the target marks delivery heading for air-to-ground practice ordnance. It could be illuminated by three lights at target center for night exercises.

Aerial Mining West, a sea area west of Punta del Soldado the southernmost tip of Culebra, was used for both visual and electronic runs. An alternative range was available for electronic runs as indicated on Plate 2.

Firings at the targets west of Culebra and on Aerial Mining West were scored from an observation post on Luis Pena Cay. Firings at targets on the Eastern Cays were observed from a spotting station at Duck Point near the eastern end of Culebra and from an observation station in the lighthouse on Culebrita Island. In addition, spotting stations were provided as shown on Plate 2 for triangulation of impacts requiring very accurate observations. In 1967, radar equipment was installed at Luis Pena Cay for tracking the profile of aircraft conducting loft and over-the-shoulder bombing and for general range surveillance. The radar equipment is also used for tracking missile firings in the Outer Range. The observation posts near Flamingo Point, at Luis Pena Cay and on Culebrita are equipped with radio communication systems which are linked through the microwave relay station at the Culebra Control Center to the AFWR Command Center at Roosevelt Roads. The AFWR Control Center is the air traffic control center for all aircraft and drone targets. Torpedo firings were observed and photographed from aircraft provided from Roosevelt Roads for scoring purposes and range surveillance.

The activities of the entire Range are directed by a range

control officer. After briefings of ship and aircraft commanders, the range control officer designates the type of exercises to be conducted (as established in the Fleet Exercise Publications discussed subsequently in this report) and the specific targets to be fired on. On completion of the exercise, he furnishes a critique on performance. In naval gunfire exercises, the range control officer is assisted by three enlisted men assigned to the Culebra Control Center for observation, scoring and communications. Two enlisted men are also assigned for spotting and communications at the observation post on Luis Pena Cay on a full-time basis, and additional personnel are assigned to other stations as needed during exercises. Additional naval and civilian personnel are assigned for technical services and logistic support as discussed subsequently herein.

### 3. Naval Gunfire Systems

The type of U.S. Navy ships which conducted firing exercises at the Northwest Peninsula in 1969 and the calibre of guns fired were as follows:

<u>Type of Ships</u>	<u>Calibre of Guns</u>				
	<u>3"-50</u>	<u>5"-38</u>	<u>5"-54</u>	<u>6"-47</u>	<u>8"-55</u>
Cruisers					
CA	x	x			x
CG		x			
CLG		x		x	
Frigates, Destroyers and Escorts					
DLG, DD, DDG, DE, DEG	x	x	x		
Amphibious	x	x	(Plus 40 mm. guns)		

The 8"-55 guns are no longer fired at Culebra. Production of the 5"-38 gun has been discontinued, and therefore its use in weapons exercises will diminish.

In addition to the ships listed above, destroyer class ships of the naval services of Great Britain, Canada, Germany, The Netherlands, France, Brazil, Colombia and Venezuela used the range; firing guns varying from 3 to 5 inches in calibre.

In 1969, ships fired only live rounds, with explosive shells being used by the U.S. Navy. To reduce hazards, firing of live rounds at the Northwest Peninsula targets has been discontinued and U.S. ships now fire only puff rounds (Mark 29, Fuse with Standard Body) at the range. All foreign ships which cannot fire puff rounds now fire live rounds at impact areas on the Island of Vieques when conducting exercises at the Inner Range.

The use of puff rounds requires unloading a portion of the ships' service ammunition at Roosevelt Roads before firing exercises, and afterwards, reloading of the service ammunition aboard the ships. The costs of puff rounds and service rounds are about the same. However, additional costs are incurred for unloading and reloading ships' service ammunition. New types of puff rounds, designed for greater reliability in emitting smoke for observation purposes, are expected to be placed in service soon. The costs of the new projectiles will be about 25 percent greater than the models used presently.

The following gunfire exercises are conducted at the Northwest Peninsula in accordance with Fleet Exercise Publications, FXP series, contained in COMPHIBLANT Instruction C3570.3 J and COMCRUDESANT Instruction C3500.3 N, designating the type of firing, number of rounds and time allotted for firing.

<u>Exercise</u>	<u>Type of Firing</u>	<u>No. of Rounds</u>	<u>Time (Minutes)</u>
Z-40-G	Direct & Counter Battery Fire	8	15
Z-42-G	Indirect Fire with check for fuse time and computer drift	10	25
Z-43-G	Indirect Fire with target shift	8	15
Z-44-G	Night Indirect Fire Destructive Rounds plus Illuminating Rounds	4 25	15
Z-45-G	Indirect Fire-Area Coverage	10	15
Z-46-G	D-Day Mission (Direct, Indirect & Area Coverage)	26	30
Z-49-G	High Speed Exercises	16	15

Exercise Z-48-G, involving firing of 20 rounds in a 20 to 30 minute period during combined naval, surface and air maneuvers is conducted at ranges on the Island of Vieques but not at Culebra.

Each ship has to fulfill the requirements of Exercises Z-40-G, Z-42-G, Z-43-G, Z-44-G and Z-46-G and some ships have to also run Exercise Z-49-G. An average of 125 rounds is fired per ship, including practice as well as scoring rounds, and the total on station time averages about eight hours per ship.

In general, U.S. ships fire at the targets on the eastern slope of the Northwest Peninsula from a range of 2,000 to 12,000 yards, depending on the exercise performed, while sailing parallel to the coastline in a northwesterly direction. There are instances where firings are conducted at greater ranges, and on occasion runs are made at angles to the coastline. (South American naval ships using the range conduct the same exercises as U.S. ships.

European naval ships fire at ranges of 10,000 to 14,000 yards.) The range at the Northwest Peninsula is large enough for a ship to complete an exercise in one pass.

#### 4. Air to Surface Systems

The following types of U.S. Navy aircraft conducted exercises at the Culebra Weapons Range during 1969:

Fighter and attack aircraft: F-4, F-8, A-4, A-6 and A-7

Other types of aircraft: OV-10, P-2 and P-3

In addition, B-52 bombers of the U.S. Air Force have used Fungy Bowl for high level radar bomb drops on several occasions. F-104 fighters and T-28 trainers of the Puerto Rican Air National Guard fired in a few instances at targets in the Range and limited use was also made of the Range by United Kingdom naval aircraft.

The ordnance delivered by U.S. Navy aircraft in 1969 varied from flares and strafing fire to bombs and rockets as follows:

Flares: MK 44, MK 45 (Parachute)

Strafing Fire: 20 mm HE/HE1

Bombs: 25 pound Practice Bombs (MK 76)  
500 pound LD Bombs (MK 82)  
500 pound General Purpose Bombs  
Shape Bombs (MK 104)

Rockets: 2.75-inch FFAR

In addition, it is understood that inert 2,000 pound bombs have been dropped during B-52 exercises. The ordnance used by United Kingdom aircraft varied from 28 pound to 1,000

pound bombs and 2-inch rockets.

Live ordnance was used during 1969 only at Fungy Bowl, Shark Rock and Palada Cays. Only inert ordnance was directed against Twin Rocks. At present, most ordnance is inert and live ordnance is used only on Fungy Bowl.

Air to surface delivery of weapons is conducted in accordance with directives in the Fleet Exercise Publications, FXP-2 series. Most U.S. naval aircraft are operated from carriers deploying overseas or engaging in readiness or fleet exercises. At times, aircraft are also based and armed at the Naval Air Station at Roosevelt Roads. In most exercises aircraft fly a number of runs around a racetrack pattern delivering ordnance on each run. Bombing runs are usually made by two to four aircraft in sequence, each delivering six bombs. The number of deliveries, flight profiles and time required to complete an exercise varies, depending on the ordnance to be delivered. These items are specified in the publications containing instructions for each given exercise. The flight courses for all targets are approximately six miles long and two miles wide. They are shown for each target on Plate 2. They may, however, be varied at times by the range control officer. The lowest altitude flown, generally in dive bombing, rocket firing and strafing runs, is about 500 feet when inert ordnance is used and 800 to 1000 feet when live ordnance is delivered. Night firings are conducted only with positive illumination of targets by searchlight or flares, except that radar bombing can be conducted without illumination of targets with the approval of AFWR provided that the pilot and controller have made daylight radar runs using the same target.

#### 5. Missile Systems

The BULLPUP series of air to surface missiles was the

only type of missile fired at the Culebra Weapons Range in 1969, and were delivered inert against Twin Rocks. Air-to-surface missile firings at the Culebra Weapons Range have been discontinued during the past few years. The run-in-line for missile delivery on Twin Rocks was the same as shown on Plate 2 for other aircraft exercises. After delivery of a missile, aircraft were held at least three miles from the target, before being permitted to resume firing, if other aircraft were also assigned to fire at the target.

#### 6. Mine Warfare Systems

Four types of aerial mine laying, designated A-24-R (FXP-2), were performed in 1969 in the waters south of Culebra, as noted below:

<u>Description</u>	<u>No. of Drops</u>
Visual parallel run	4
Electronic parallel run	4
Visual perpendicular run	1
Electronic perpendicular run	1

All flight patterns for aerial mining were rectangular with a three-mile separation between inbound and outbound legs and altitudes were 300 feet on mining runs, commencing at Punta Soldado, and 700 feet on return runs.

#### 7. Ordnance Removal

Prior to 1970 when live ordnance was used, a ten-man team of specialists was periodically assigned to remove unexploded live ordnance (duds) from target areas. As a practical

matter, only duds at or near ground surface and exposed at the sea bottom have been removed. Detection of deeply embedded ordnance is difficult; even when located their removal is so hazardous and costly as not to be warranted as long as the range areas continue to be used for weapons training.

Consequently, there are duds in the ground and in the sea bottom near the target areas. It is reported that there are also some unexploded torpedoes in the water near Mark Point on Culebrita which had been used as a submarine torpedo range.

Equipment used for target replacement is able to traverse the range areas with very little likelihood of detonating deeply embedded duds. Cattle that graze on the Northwest Peninsula when it is not in use for weapons exercises have been injured or killed by explosion of embedded duds in only a few instances. If the range areas were to be made available for residential, commercial or industrial development, however, complete decontamination would be necessary to avoid hazards from detonation of duds.

#### 8. Communication Systems

Communications for weapons range operations are conducted by radio through the Control Center at Flamingo Point, which is operated 24 hours per day, seven days per week. Relays are provided to the observation post at Luis Pena Cay. Radio communications were provided to the observation station at Culebrita until 1970 when use of the ranges in the eastern cays were discontinued. The microwave relay station, at Culebra Control

Center also provides a link which must be maintained for communications between Roosevelt Roads and the Island of St. Thomas, and for electronic warfare in the Outer Range.

Messages from AFWR for control of range operations are sent by radio and verified by mail delivered via helicopter usually during the same day, but not later than the next day.

Civilian aircraft and vessels are required to obtain clearance from the Control Center on a frequency of 2182kHz for entry into restricted areas during periods of actual firing on the range.

There are two public telephone systems on the Island of Culebra for civilian use. The systems are linked by radio transmission via Vieques to El Yunque on the main island of Puerto Rico and thence by microwave relay to Caguas. There are no submarine telephone or telegraph cables to Culebra.

#### 9. Logistic Support Systems

Logistic support for range operations is provided under the control of AFWR, through the U.S. Naval Station at Roosevelt Roads. Some of the aircraft assigned to weapons training are based and armed at the Naval Air Station at Roosevelt Roads. Ships are also serviced at the Fleet Landing in Roosevelt Roads, and as noted previously, puff rounds to be used in weapons training are loaded aboard ships at the Fleet Landing Area.

Provisions, supplies and equipment for the observation posts and camp installations on Culebra are provided from Roosevelt Roads by U.S. Navy helicopter and YFU landing craft.

The frequency of helicopter service varies depending on the intensity of range operations. In general, there is an average of five helicopter flights per week with landings primarily at the Control Center at Flamingo Point and with stopovers, as required, at Luis Pena Cay. In 1969, when the ranges in the Eastern Cays were used, helicopter service was also provided to the observation station on Culebrita where a concrete landing pad was installed. Service is often provided also on the flight circuit to range facilities on the Island of Vieques. Direct flights from the Naval Station to either Culebra or Vieques take about 15 minutes and the flight time between the Islands is about 5 minutes.

There is a civilian airstrip on Culebra, suitable only for light aircraft. Its location poses difficulties because of unfavorable winds during landings. Only limited use is made of the airstrip by civilian aircraft, and it is rarely used by naval aircraft.

YFU landing craft, capable of transporting five trucks, heavy equipment and material, make one or two trips per week to Culebra from the Fleet Landing Area at Roosevelt Roads, often stopping at Vieques enroute. A round trip takes about ten hours.

Servicing and maintenance of the range facilities is provided from the Lower Camp located on the northern shore of Ensenada Honda, the embayment within Culebra Island. At the Camp, there are shops for repair of equipment and launches, fuel storage tanks, as well as living quarters for the officer-in-charge of the Camp. Water is supplied from a sea-water distillation plant, owned and operated by the public works agency of the Town of Dewey and electric power is obtained from the local utility organization. Radio and communications from the Lower Camp are relayed through the Control Center at Flamingo Point.

Four 18-foot launches are currently provided for patrol of the range areas and servicing of targets at the cays. (In 1969, there was only limited patrolling.) The launches are based at a landing alongside the Lower Camp. YFU craft from Roosevelt Roads berth at ramps nearby for unloading of material.

There is a public ferry service from Fajardo, north of Roosevelt Roads, to Dewey--the only town on the Island of Culebra. The ferry makes trips daily to Culebra with stopovers at the Island of Vieques.

### C. SAFETY ZONES

#### 1. Impact Areas

Based on actual experience in weapons range operations as well as analytical considerations of weapons performance and evaluations of the proficiency of units undergoing training, the probable extent of impact areas for each of the weapons fired at the Culebra Weapons Range have been established by the Department of the Navy as shown on Plate 3. An impact area is defined as the zone around a target in which ordnance aimed at the target is likely to fall, except in the rare cases of gross error, plus an allowance for the distance to which explosive effects of live ordnance and scattering of debris from inert ordnance could extend from the point of impact. With the use of inert air to surface ordnance (bombs and rockets), spotters have been able to be assigned to bunkered observation stations within an impact area without any danger. The areas, however, do not encompass the full extent of possible travel of ricochets, which are particularly a problem with the use of inert ordnance. Consequently safety zones extending beyond the impact areas are established as discussed hereinafter.

## 2. Naval Defensive Sea Area

As noted previously, a Presidential Order in 1941, designated Culebra as a Naval Defensive Sea Area extending three miles offshore of the Island and its surrounding cays in accordance with International Law. Permission must be obtained from the Secretary of Navy or authorized representative (AFWR) by civilian ships and aircraft for entry into the Naval Defensive Sea Area. Enforcement of the Presidential Order and the imposition of penalties on unauthorized entry into the Naval Defensive Sea Area were upheld in a 1968 court test.

In 1971, restrictions were removed on access by ships and aircraft through a corridor designated the Free Access Sea Sector located at the southern side of Culebra (Plate 2). A recent Presidential Order further reduced restrictions on shipping and air traffic in the area of the Eastern Cays, the use of which for weapons exercises has been discontinued.

## 3. Restricted Area

A Restricted Area had also been established coinciding with the Naval Defensive Sea Area for control of air traffic. The altitude restriction extends to 50,000 feet when aircraft exercises are conducted.

## 4. Warning and Danger Areas

A Warning Area and a coinciding Danger Area, extending beyond the limits of the Restricted Area were also established for air and ship traffic respectively to provide an additional safety zone. The altitude restriction in the Warning Area is extended to 50,000 feet when aircraft exercises are conducted.

The Warning Area and Danger Areas were revised in 1971 with deactivation of the weapons ranges at the Eastern Cays. The limits of the original and revised Areas are shown on Plate 2. Since the Warning and Danger Areas are outside the "three-mile limit", the Department of the Navy has no jurisdiction to clear vessels and aircraft entering the areas. Consequently, exercises are suspended in the event of intrusions even though notices are given to airmen and marines as discussed below.

a. Air Traffic

AFWR furnishes advance notices to the FAA of impending weapons training exercises for FAA's regulations of air traffic. These notices to airmen (NOTAMS) are relayed to airmen by the FAA and schedules of range activities are published in the newspaper, *El Mundo*, circulated throughout Puerto Rico.

Air traffic can traverse the Restricted Area of the Inner Range only with permission, as noted previously. However, local airlines and private planes using visual flight rules (VFR) are allowed by FAA regulations to fly over the Inner Range when it is not in use. At times when range exercises are being conducted, overflights under controlled conditions are coordinated by AFWR and the FAA. Commercial planes and other aircraft flying under instrument flight rules (IFR) must at all times use air corridors outside of the Inner Range when it is in use (Plate 1).

During exercises, aircraft may land on or take off from the landing strip at Culebra by using a narrow corridor running southeastward from the strip, provided that permission is received from the Control Center (call letters "Big Mary") at Flamingo Point. There is also an air corridor between the Islands of Culebra

and Vieques which can be used during exercises if permission is obtained from the Control Center.

b. Ship Traffic

Advance notices to mariners (HYDROS), advising of range activities and restrictions to navigation, are posted in Spanish and English in the town of Dewey and at Yacht Clubs in San Juan and Fajardo, as well as being published in the newspaper, El Mundo.

During 1969, navigation to and from Culebra was possible during exercises, with authorization from the Control Center, only along the same corridor that serves the landing strip. Upon deactivation of the target areas in the Eastern Cays, evaluations by the Department of the Navy indicated that navigation of vessels between the Islands of Culebra and Vieques can be conducted safely during exercises at the Northwest Peninsula and Western Cays, and a sea lane was established for such purposes in the recent modification of the Naval Defensive Sea Area.

D. RANGE USE

The naval gunfire target area on the Northwest Peninsula is separated sufficiently from the aircraft weapons targets to permit the conduct of ship firing exercises without interference between ship and aircraft exercises. However, all aircraft targets cannot be used at the same time because of the proximity and overlapping of aircraft flight paths for the various targets (Plate 2). The concurrent use of aircraft weapons targets in 1969 was subject to the following restrictions:

Aircraft Target Location

Non-Concurrent Use

Western Cays

Fungy Bowl

Twin Rocks

Twin Rocks

Fungy Bowl, Mining West Range

Agua Cay

Mining West, Alternative Range

Eastern Cays

Culebrita

Shark Rock, Palada Cays, Ladrone Cay, Mining East.

Shark Rock

Palada Cays, Ladrone Cay, Culebrita, Mining East.

Palada Cays

Shark Rock, Ladrone Cay, Culebrita, Mining East.

Ladrone Cay

Shark Rock, Palada Cays, Culebrita, Mining East.

Mining East  
(Available but not used)

Shark Rock, Palada Cays, Ladrone Cay, Culebrita.

Western Mining Ranges

Mining West

Twin Rocks loft bombing

Mining West, Alternative Range

Agua Cay

During 1969, only three targets could be used concurrently for aircraft weapons delivery exercises:

- 1) either Fungy Bowl or Twin Rocks
- 2) Agua Cay
- 3) only one of the areas in the Eastern Cays

With use no longer being made of the target areas in the Eastern Cays, plus the relocation of the target from Agua Cay to Cross Cay (now being completed), only one target at a time will

be available for aircraft weapons exercises - namely, Fungy Bowl, Twin Rocks or Cross Cay.

The use of Cross Cay would interfere with aerial mine laying in the Western Mining Range. The Western Mining Alternative Range can, however, be used when any of the presently available targets (Fungy Bowl, Twin Rocks and Cross Cay) are in use.

During 1969, the weapons ranges were operated 17 hours per day commencing at 0600 hours, Monday through Saturday, and occasionally for several hours on Sunday. Presently, the ranges are operated Monday through Friday, and only in emergencies on Saturday and Sunday. In 1969, the Range was in use an average of 18 hours per day during SPRINGBOARD which was conducted during the period from 1 January to 31 March, and an average of eight hours per day during the balance of the year.

A daily log available at the Culebra Control Center indicates that the Northwest Peninsula target area was used for naval gunfire exercises for a total of 1,621 hours during calendar year 1969. Monthly usages were as noted in Table I-1.

The number of hours represents the time ships were "on station" to conduct weapons exercises. Information as to the actual time weapons were fired at targets during 1969 is not available. As noted in Table I-1, the peak usage of the naval gunfire range occurred during March when daylight exercises were conducted during almost all of the approximately 400 daylight hours available during that month, and night exercises were conducted over a total of 124 hours. Usage of the range during other months was considerably less intensive, and never exceeded 50 percent of the daylight hours available during a month.

Table I-1

USAGE - NORTHWEST PENINSULA NAVAL GUNFIRE RANGE - CULEBRA  
CALENDAR YEAR 1969

<u>Month</u>	<u>Number of Hours</u>			<u>Gross Monthly Usage as % of Yearly Total</u>
	<u>Daylight Exercises</u>	<u>Night Exercises</u>	<u>Total</u>	
January	143	32	175	10.8
February	185	33	218	13.5
March	399	124	523	32.3
April	90	20	110	6.8
May	107	17	124	7.6
June	115	30	145	8.9
July	28	8	36	2.2
August	58	6	64	3.9
September	84	10	94	5.8
October	57	4	61	3.8
November	32	3	35	2.2
December	<u>33</u>	<u>3</u>	<u>36</u>	<u>2.2</u>
Total	1,231	290	1,621	100.0

During the year 1969, a total of 207 ships, including two U.S. Coast Guard vessels and 16 foreign ships, fired at the Northwest Peninsula. They conducted 973 daylight exercises and 177 night exercises. Of the total number of ships, only 85 were engaged in night exercises. The average range usage factors were as follows:

Naval Gunfire Exercises - Culebra

<u>Usage</u>	<u>- Averages -</u>		<u>Total</u>
	<u>Day</u>	<u>Night</u>	
Hours per ship	6.65	3.40	7.83
Exercises per ship	4.85	2.08	5.66
Hours per exercise	1.37	1.63	1.41

The time for naval gunfire night exercises during SPRINGBOARD 1969 varied from 32 hours per month during January and February to 124 hours during March, or from a low of about 15 percent to a high of 24 percent of the total time the target area was in use. During the balance of the year, the time for naval gunfire night exercises ranged from a low of 2.3 hours during November to a high of 20 hours during April or a range of 7 to 20 percent of the total usage time per month.

During SPRINGBOARD 1969 a total of 113 ships fired at the Northwest Peninsula target area, 57 of which were engaged in night as well as day exercises. Almost all the vessels were involved in SPRINGBOARD exercises. Therefore, if the Culebra Weapons Ranges are to be relocated, consideration has to be given to scheduling the transit and costs therefor of 113 ships between the Outer Range used for SPRINGBOARD and the relocated range.

The extent of data concerning aircraft exercises conducted during calendar year 1969 is limited. Consequently, use is made in this study of available data covering the period from 1 October 1968 through 30 September 1969, and fiscal year 1970, commencing 1 July, 1969. It is reported that 6,101 aircraft sorties were made in aircraft exercises conducted at the Culebra Ranges during calendar year 1969, totalling almost 40,000 target runs. During the one-year period from 1 October 1968 through 30 September 1969, 6,136 aircraft sorties were conducted totalling 2,530 hours over the target areas. With concurrent usage of targets the range was actually used in part or in its entirety for a total of 2,028 hours.

The number of hours during which the targets were used for various type of aircraft exercises are noted below:

Usage - Aircraft Target Areas - Culebra Ranges  
1 October 1968 through 30 September 1969

<u>Type of Exercise</u>	<u>Number of Hours</u>	<u>Percent</u>
Bombing and Rocket Firing	1,506	60
Strafing	502	20
Air-to-Ground Missiles	48	2
Aerial Mining	283	11
Photoflash/RADEX	<u>191</u>	<u>7</u>
Total	2,530	100

The number of hours noted above are used in this study as being representative of levels of activities during calendar year 1969. They represent "on-station time", i.e. when aircraft are in the flight pattern specified for an exercise as well as the actual time of firing or conduct of a mission. Each sortie averaged 25 minutes in duration over the target area. Carrier based aircraft are usually aloft 1 hour and 40 minutes to conduct overall readiness exercises in addition to target runs. Information is not available as to the number of each type of exercise conducted, nor of the actual time of firing involved. The Photoflash/RADEX exercises comprise almost all of the night exercises, so that daylight exercises amounted to about 90 percent of the total aircraft exercises.

Information concerning monthly usage of the aircraft target areas is available for the fiscal year 1970, commencing July 1, 1969, and is presented in Table I-2. Estimates were made of range usage during the first six months of calendar year 1969 on the basis that after allowance is made for known differences in the time spent on aerial mining exercises, the proportion of firing in each month and the division among targets was comparable to the period from January through June 1970. The estimates are presented in Table I-3.



DEPARTMENT OF THE NAVY  
UNITED STATES ATLANTIC FLEET  
HEADQUARTERS OF THE COMMANDER IN CHIEF  
NORFOLK, VIRGINIA 23511

4000  
Ser N044/ 2578

11 June 1973

From: Commander in Chief U. S. Atlantic Fleet  
To: Chief of Naval Operations

Subj: Time-Phased Plan for Relocation of Training Activities  
from the Culebra Complex to the Islands of Desecheo  
and Monito

Ref: (a) CNO 261446Z May 1973  
(b) Atlantic Fleet Integrated Weapons Training  
Ranges (Culebra Study) of 16 Oct 1972

Encl: (1) Method I - Milestones for Relocation  
(2) Method II - Milestones for Relocation

1. In accordance with reference (a), enclosures provide the tentative milestone schedules and preliminary estimates of costs for relocation of the weapons training operations at the Culebra Complex to the Islands of Desecheo, Monito and Mona with provisions for support facilities at Ramey Air Force Base. As directed, the schedules and estimates are based on the information and planning in the Culebra Study (reference (b)) and on development of the following facilities:

a. At Desecheo - Naval gunfire targets, a <sup>scoring</sup> missile and <sup>surveillance</sup> air-to-ground weapons target, observation posts, radar and communications systems, quarters for range operating personnel and ancillary facilities, including a boat landing and helo pad.

b. At Monito - A <sup>for effect only.</sup> missile and air-to-ground weapons target and a helo pad.

c. At Mona - Profile tracking radar equipment and facilities for observation and scoring of weapons training exercises at Monito, surveillance radar and communications systems, quarters for range operating personnel, boat landing, helo pad and ancillary facilities.

d. Ramey Air Force Base - Existing facilities, refurbished as necessary, at Ramey Air Force Base are proposed to be used in establishing an AFWR station for support of weapons range operations and communications links to Roosevelt Roads.

E-8

ENCLOSURE (2)

TAB D

DESANITIZATION OF THE NORTHWEST PENINSULA OF THE  
ISLAND OF CULEBRA

Ref: (a) COMNAVORDSYSYSCOM Tentative Ordnance Clearance Plan  
of 8 Dec 1972

1. Three hundred and twenty acres of the Culebra NW peninsula are considered to be contaminated, as are the contiguous water areas. The land area characteristics are hilly, grass-shrub cover over rock and earth soil. Earth-moving equipment can therefore be used only in part.

2. The peninsula was used for live gunnery practice between 1936 and January 1, 1972. Eighty percent of the ammunition was 5"/38 and 5"/54 calibre. Ten percent was 3"/50, 6"/47 and 8"/55 gun ammunition. The balance included other calibres up to and including 16"/50, mortar, and howitzers. An estimated total of 750,000 rounds have been fired. During the period 1942 to 1968 an estimated 320,000 units of air ordnance were delivered, up to 1000 pounds in size.

3. Costs - - - - \$3,520,000

a. Would include:

- Sub-surface clearance of land area
- Underwater clearance (1000 acres)
- Factor for Culebra conditions
- Land restoration

*also  
of contamination*

The above costs are based on civilian contract.

4. Time Required

Sub-surface, 29-man team at 2 acres/day	160 days
Underwater, 18-man team at 2 acres/day	500 days
Teams working simultaneously, 250 working days/year	2 years

The above estimates are based on dud clearance to a depth of six feet below the land surface and dud clearance of only the surface of the sea bottom.

5. Other Pertinent Factors

a. Civilian contractors having at the present time a well-rounded explosive ordnance clearance capability are few.

b. While there has been a continuing program by available EOD personnel to clear certain areas, the efforts have been devoted primarily to surface clearance only, as has been done at Culebra.

c. Underwater clearance in this addressal is concerned only with explosive ordnance which is on the bottom and does not refer to ordnance buried below the sea bottom.

d. Ecological constraints imposed by environmentalists normally dictate that contaminated areas be sanitized without insult to the environment. That would be extremely difficult in the case of Culebra.

e. The number of duds per acre must be estimated at no less than six.

f. Heavy earth-moving equipment suitable for uncovering ordnance are generally unsuitable for live ordnance due to operator safety.

g. Avoidance of Navy liability in any litigation that could follow would be dependent upon a demonstration of the thoroughness of the decontamination effort using the most modern and accepted methods. A disclaimer would probably be of limited value in protecting the Government from liability.

U. S. NAVAL AIR STATION  
NAVY NUMBER 1506  
FLEET POST OFFICE  
NEW YORK, N. Y.

AD JNE/ert  
NA51/A12  
Serial: 029

DECLASSIFIED AT 3 YEAR INTERVAL  
DECLASSIFIED AFTER 12 YEARS  
DOD DIR 5200.10  
AUG 5 1949

CONFIDENTIAL

From: Commanding Officer, U.S. Naval Air Station, Roosevelt Roads, P.R.  
To : Office of the Chief of Naval Operations (Aviation History Unit).

Subj: Historical Report for Period Ending 30 June 1949 - submission of.

Ref.: (a) Aviation Circular Letter No. 18-49

Encl: (A) Historical Report of U.S. Naval Air Station, Roosevelt Roads,  
P.R.

1. Reference (a) directs that a Historical Report be submitted by the Commanding Officers of each command, wing, group, squadron, station, ship or unit.
2. Enclosure (A) of reference (a) sets forth the instructions and the form to be used in submitting the Historical Reports.
3. In accordance with reference (a), with enclosure thereto, the Historical Report for the U.S. Naval Air Station, Roosevelt Roads, Puerto Rico is herewith submitted.

1919-30 June 1949

*P. W. Watson*  
P. W. WATSON

USMC Historical Center Library  
CODE HDS-3 BLDG 58  
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WASHINGTON DC 20374-0588

**CONFIDENTIAL**

**E-9**

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PART I CHRONOLOGY

1. Captain W.B. Whaley was the first commanding officer of the Naval Air Station, Roosevelt Roads. Captain Whaley was relieved by Captain R. G. Armstrong on Friday, 27 August 1948.
2. This activity is assigned to the Naval Air Bases Command, Tenth Naval District, and is further assigned to the Naval Operating Base, Roosevelt Roads and is under the management control of the Bureau of Aeronautics.
3. The Naval Air Station is located on the Eastern-most tip of the island, latitude 18°-15' North, longitude 65°-38' West, nine miles Southeast of the town of Fajardo, P.R.
4. Area of geographic responsibility: In addition to the Naval Operating Base, the Islands of Culebra and Vieques.
5. Other historical events of importance:
  - (a) In the past fiscal year the Shore Bombardment Training Unit conducted 2 air strikes and 50 bombardment exercises at Culebra.
  - (b) 12 January 1949 - Rear Admiral Chandler (DC) USN aboard to inspect dental department.
  - (c) 15 January 1949 - Brig. Gen. Worton USMC TTULant sets up headquarters at Vieques for annual maneuvers.
  - (d) 22 January 1949 - Rear Admiral Baker, USN, ComServLant and inspecting party aboard to conduct operational readiness inspection of the Naval Operating Base.

HISTORICAL REPORT OF U. S. NAVAL AIR STATION, ROOSEVELT ROADS, P.R.

CONFIDENTIAL

PART I CHRONOLOGY

1. Captain R. G. Armstrong, USN, was the Commanding Officer of the Naval Air Station Roosevelt Roads, Puerto Rico from 1 July 1949 to 29 July 1949. Captain Armstrong was relieved by Captain P. W. Watson, USN.

2. Naval Air Station, Roosevelt Roads, is a component of the Naval Operating Base, Roosevelt Roads, and is under the military command of Commander, Naval Air Bases, Tenth Naval District, under the operational control of Commander-in-Chief, U. S. Atlantic Fleet, and under the management and technical control of the Bureau of Aeronautics. (1)

3. Other historical events of importance are as follows:

a. During the period of this report the Cunfire Shore Training Unit conducted one air strike and twenty-nine bombardment exercises at Culebra Island.

b. On 12 July 1949, Rear Admiral W. M. Angas, CEC, USN, Director of Atlantic Docks arrived on board to inspect the CBD-1516 Detachment.

c. On 9 September 1949, Captain G. C. Montgomery, USN, Commander, Fleet Air Wing Eleven, and staff arrived on board to conduct the annual administrative inspection of Patrol Squadron Five and Fleet Aircraft Service Squadron One Hundred and Nine.

d. On 29 September 1949, Captain T. H. Taber, MC, USN, Tenth Naval District Medical Officer arrived on board to conduct an annual inspection of the Medical Department.

e. On 12 November 1949, Captain L. W. Cease, SC, USN, Tenth Naval District Supply Officer, and staff arrived on board to conduct a periodic inspection of the Fiscal Division of the Supply and Fiscal Department.

CONFIDENTIAL

PART II NARRATIVE

CONFIDENTIAL

shore. Considering the semi-tropical climate the recreation facilities provided are inadequate for the current mission. A suitable recreation building to house Navy Exchange, library and combination auditorium and gymnasium with an associated outdoor swimming pool is considered to be the minimum necessary recreation facility for this command. A project for such a building has been submitted by the Station Shore Station Development Board.

The war reserves stored at the Naval Air Station in accordance with CNO directive, confidential letter serial 0298P40 of 4 Aug 1947, as modified by CNO confidential letter serial 085P40 of 13 April 1948 to BuOrd, consist of the following items. (6)

- 480 tons G.P. Bombs.
- 58 tons aerial depth charges.
- 60 tons fragmentation bombs.
- 660,000 rounds aviation ammunition.
- 625,000 rounds small arms.
- 8,000 aircraft rockets.

Operating equipment assigned to the activity is summarized below:

a. Automotive Equipment.

<u>TYPE</u>	<u>NUMBER</u>
Buses	2
Coupes	0
Sedans	3
Station Wagons	5
Carryalls	0

CONFIDENTIAL

15

Enclosure (1)

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX F

LETTERS/MEMORANDUMS/MISCELLANEOUS ITEMS

APPENDIX F  
LETTERS/MEMORANDUMS/MISCELLANEOUS ITEMS

Table of Contents

- F-1. 1924 Navy letter on Marine leases (B-122)
- F-2. 1934 Marine letter (B-121).
- F-3. 1971 agreement curtailing training (B-4).
- F-4. Message closing ranges (B-3).
- F-5. Public Law 93-166 (B-109).
- F-6. FWS letter on OEW (B-131).
- F-7. 1942 letter on Army guns (B-110).
- F-8. 1958 letter authorizing torpedo firings (B-17).
- F-9. 1978 letter on found ordnance (B-21).
- F-10. 1983 memo on OEW near Cayos Geniqui (B-26).

COPY:

10602-253-U

5th Endorsement

March 29, 1924.

From: Judge Advocate General.  
To: Chief of Naval Operations.

Subject: Culebra, Porto Rico. Temporary Fleet Base - Disposition of property, etc.

1. Forwarded, contents noted.
2. This office knows of no legal objections to the employment of a civilian care-taker for the Culebra property if such a course is determined upon.
3. The Marine Corps occupies under lease from Mr. Jesus Nieves about 140 acres of pasture land, together with such hills as may be selected by the Navy and Marine Corps forces ashore for artillery, aviation and infantry positions. Under the terms of the lease this land is authorized to be occupied by troops as camp grounds, aviation fields, athletic fields, etc. This lease carries a monthly rental of \$250.00 terminating the first part of April, 1924, and is subject to be renewed by the Government at the same monthly rental. It is understood that this is part of the property to be placed in the custody of the civilian care-taker.

/s/ J. L. (?)

IN REPLYING  
REFER TO NO.

1275-10  
1975-80/8



*Transmittal*

OFFICE OF THE COMMANDING GENERAL  
FLEET MARINE FORCE  
Marine Barracks, Quantico, Virginia.

28 September 1934.

From: The Commanding General.  
To: The Major General Commandant.  
Subject: Procurement of camp sites and maneuver ground,  
Island of Culebra.

References:

- (a) Letter C-in-C to Chief of Naval Operations, A4-3/KK 3721, dated 17 August 1934, re Coordination of Fleet Marine Force Training and special firing of Special Service Squadron.
- (b) Letter CG, FMF, to Chief of Naval Operations, 1975-80/8, dated 25 September 1934, re Coordination of Fleet Marine Force Training and special firing of Special Service Squadron.
- (c) Copy of lease between Jesus Nieves and the United States of America.
- (d) Map, Culebra, Yards and Docks file 367-3-9, dated 26 September 1925.

Enclosures:

- (2).
- (A) Copy of reference (a).
- (B) Copy of reference (d).

1. With reference to operations in the Culebra Area and pursuant to the recommendations outlined in reference (a), the following applies to shore operations of the Fleet Marine Force:

- (a) It is proposed to establish a camp for approximately 500 men over a period of thirty (30) days. (3d quarter). An increase of this number for shorter periods is possible.
- (b) Operations contemplated point to the use of certain surrounding hills for temporary gun emplacements for 155 m/m Guns, 75 m/m Pack Howitzers, and .50 cal. A.A. Machine Guns, and the use of land adjacent to favorable landing beaches for the maneuver of troops.

Subject: Procurement of camp sites and maneuver ground,  
Island of Culebra.

-----

- (c) An advanced landing field in the vicinity of the head of Great Harbor.
- (d) A suitable area for use as a combat range for infantry weapons is also desired.
- (e) Reference (b) contains recommendations for the use of land suitable for exercises in naval gun fire support.
- (f) Reference (c) outlines terms of a lease for certain property used by the Marine Corps 1923-24 Maneuvers. (Headquarters file).
- (g) Reference (d) shows areas of ground where supposedly Government property is located and that as belonging to the Navy Department.

2. In view of the foregoing and in order to assure arrangements for proposed 1934-35 maneuvers, 3d quarter, the following is requested:

- (a) That authority be obtained to occupy the Naval Station at Culebra and adjacent Government lands supposedly belonging to the Navy Department - reference (d).
- (b) Should the land referred to in the foregoing paragraph prove unsuitable or inadequate for the Exercises, that the undersigned be authorized to lease, after arrival at Culebra, such additional land as may be required for the operations.
- (c) Reference (d) outlines certain areas as Government land, i.e. - Tract #91 between Stream Point and North West Point. With due regard to any existing occupancy, the use of this area is requested for actual fire problems for infantry, light artillery, and aircraft weapons.

3. The decision as to where the experimental naval gun fire is to be conducted will be made by the Commander, Special Service Squadron. That officer has tentatively selected Cross Cay.

C. H. LYMAN.

-----  
Copy to: Comsperon.  
-----

The dispute over the Navy's use of Culebra and its offshore cays for weapons training has dramatically posed the problem of balancing the need to conduct the training essential for our national defense with the legitimate desires and aspirations of our private citizens. All persons of good will who are interested in the continued close relationship between Puerto Rico and the United States, the security of our nation, and the aspirations of the people of Culebra have hoped that this problem could be amicably resolved. Through the dedicated efforts and good will of all concerned a mutually acceptable balance has finally been found between the training needs of the Navy and the desires of the people of Culebra. We are pleased to announce the terms of that agreement, ~~and to pledge our continuing efforts to assure that it is carried out in good faith.~~" and to pledge our continuing efforts to assure that it is carried out in good faith.

1. The Navy will not shoot the Walleye missile at Culebrita or at any other target in the Culebra complex, and the Navy will not obtain the easements on the east end of Culebra that were approved by the House and Senate Armed Services Committees.

2. The targets off the east coast of Culebra will be phased out by January 1, 1972, and the lease on North Cay will be terminated on that date. Culebrita and the other target cays in the area will be declared excess as of that date except for several acres on Culebrita near the lighthouse where the Navy intends to establish a small electronics warfare installation (several vans) for use in training fleet units in the open ocean north of Culebra.

3. In addition to the shoreline already announced for release, the Navy will declare excess to its needs the shoreline on the east coast starting at a point immediately east of the base camp and proceeding around the east end of Culebra to the beginning of the Navy property holdings on the north coast (Swell Bay) (see attached map). The Navy will cooperate in preserving the ecology of excessed areas as requested by the Municipality and by appropriate federal and commonwealth agencies.

4. The Navy will relocate its bulls-eye target on Agua Cay to Cross Cay by January 1, 1972.

5. The north-south line bordering the northwest peninsula safety zone will be reoriented as shown on the attached map. The parcel of land marked "A" on the attached map will therefore no longer be part of the naval gunfire support safety zone.

6. The Navy will initiate and support an amendment to the executive order creating the defensive sea area around Culebra so that the order will cover only the safety zones for the ship-to-shore gunfire and for the west-range air-to-ground targets (see attached map).

7. Governor Ferre, Mayor Feliciano, and Senate President Hernández Colón solemnly pledge to use all regulatory and legal devices available to the Commonwealth and the Municipality of Culebra to assure that no dwellings or other habitable structures are constructed in the northwest safety zone for as long as the Navy uses the northwest peninsula for naval gunfire support training. If landowners in the area complain that their property is being taken without due process of law or if, despite the above-mentioned regulatory and legal devices, individual landowners take steps to construct dwellings or other habitable structures in the safety zone, then the Navy will pay such landowners the fair value of foregoing the right to construct said dwellings or other habitable structures.

F-3

Enclosure 281 281 CINCLANTFLT  
Serial 6256 1971

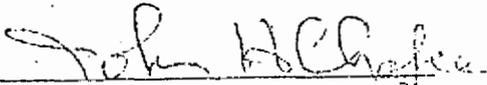
8. Since the Navy is giving up a substantial number of targets, its remaining targets will become that much more important. In consideration of this action by the Navy and in recognition of the Navy's need to schedule the use of the remaining targets more tightly, Governor Ferre, Senate President Hernández Colón, and Mayor Feliciano will use their best efforts, including moral suasion, to obtain the cooperation of everyone in keeping the land and sea safety zones for the remaining targets clear of people during scheduled training operations.

9. No training operations around Culebra will be conducted on weekends or holidays except to meet an urgent operational commitment. In the event that this becomes necessary the Admiral commanding the Caribbean Sea Frontier, or in his absence the officer acting in that capacity, will be personally aware of and will have personally approved such operations, and the Mayor of Culebra will be personally notified by an authorized representative of the Commander of the Caribbean Sea Frontier at least twenty-four hours in advance of any such training operations.

10. The Navy solemnly and definitively agrees to abandon its plans to acquire easements or any other interest in land on Culebra and its adjacent cays by eminent domain or other means except as provided by paragraph 7 of this agreement.

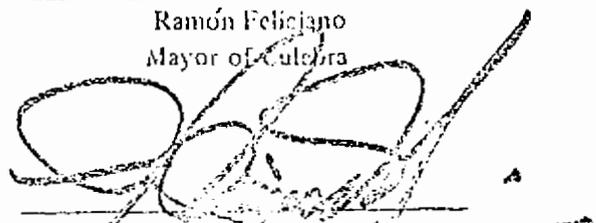
11. There will be no time limit on the duration of this agreement, but the Navy promises to continue to investigate both technological and geographical alternatives to the training done around Culebra. The purpose of these investigations will be to find feasible alternatives that will eventually permit the transfer away from Culebra of the training that will be conducted after January 1, 1972.

*Dated the 11th day of January 1971*

  
\_\_\_\_\_  
John H. Chafee  
Secretary of the Navy

  
\_\_\_\_\_  
Ramón Feliciano  
Mayor of Culebra

  
\_\_\_\_\_  
Luis A. Ferré  
Governor of Puerto Rico

  
\_\_\_\_\_  
Rafael Hernández Colón  
President of the Puerto Rican Senate

12. It is the position of the Puerto Rican Government, Governor Ferré, Senate President Hernández Colón and Mayor Feliciano that the Navy should terminate all training operations on Culebra and its neighboring Cays within a reasonable period. It is the hope of the Signatories listed above that the study that the Department of Defense is required by law to undertake will conclude that this is feasible.



ROUTINE

\*\*\*\*\*  
\* UNCLASSIFIED \*  
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PT 00413

231 180015

*Info board*

*B*

RTTUZYUW PUENAAA3181 2311745-UUUU--RUCLOHA.

ZNR UUUUU

R 191205Z AUG 75

FM CNO WASHINGTON DC

TO RUCRSAA/CINCLANTFLT NORFOLK VA

INFO RUEOETA/CMC WASHINGTON DC

RULSSAA/CHNAVMAT WASHINGTON DC

RUCLOHA/COMNAVFORCARTB ROOSEVELT ROADS PR

RUECALL/COMNAVAVIRLANT NORFOLK VA

RUEOLF/CGEMFLANT NORFOLK VA

RULSSAA/COMNAVFACENGCOM ALEXANDRIA VA

RUCLOHA/LANTFLTWPNTAFAC ROOSEVELT ROADS PR

RUCLOHA/NAVSTA ROOSEVELT ROADS PR

RULSSAA/COMNAVARSYS COM WASHINGTON DC

RULYSHH/LANTNAVFACENGCOM NORFOLK VA

RUCLOHA/NAVREP-SO ATLANTA GA

BT

UNCLAS //NICCC//

CULEBRA WEAPONS TRAINING

A. DEFENSE DEPARTMENT MEMO TO CORRESPONDENTS OF 1 AUGUST 1975

(NOTAL)

1. THE OFFICE OF THE SECRETARY OF DEFENSE HAS ADVISED THAT DECISION

PAGE 02 RUFNAAA3181 UNCLAS

TO TERMINATE CULEBRA CAY TRAINING HAS BEEN MADE. ACCORDINGLY, THE COMMANDER IN CHIEF OF THE ATLANTIC FLEET IS DIRECTED TO TERMINATE ALL WEAPONS TRAINING ACTIVITIES ON THE CAYS OF CULEBRA BY 2400 ON SEPTEMBER 30, 1975.

2. REF A IS THE OSD ANNOUNCEMENT OF THIS DECISION PROVIDED FOR INFO:

"MEMORANDUM FOR CORRESPONDENTS: AUGUST 1, 1975

NAVAL WEAPONS TRAINING ACTIVITIES ON THE CAYS LOCATED AROUND THE PUERTO RICAN ISLAND OF CULEBRA WILL BE PERMANENTLY TERMINATED ON SEPTEMBER 30, 1975.

TERMINATION OF THESE TRAINING ACTIVITIES IS POSSIBLE DUE TO THE CURRENT LOWER LEVEL OF FLEET TRAINING REQUIREMENTS. AN ALTERNATIVE NEW SITE WILL BE REQUIRED AS SOON AS ONE CAN BE MADE AVAILABLE, HOWEVER, TO MEET ANTICIPATED FUTURE INCREASES IN NAVY ATLANTIC FLEET TRAINING REQUIREMENTS. A COMMISSION JOINTLY APPOINTED BY THE GOVERNOR OF PUERTO RICO AND THE SECRETARY OF DEFENSE HAS BEEN AT WORK IN A COOPERATIVE EFFORT TO IDENTIFY A SUITABLE SITE TO WHICH THE CULEBRA TRAINING CAN BE RELOCATED. BOTH

*AFWTF ATTN: MED/1 ORIGINAL*

ROUTINE

\*\*\*\*\*  
\* UNCLASSIFIED \*  
\*\*\*\*\*

F-4 19130

ROUTINE

\*\*\*\*\*  
• UNCLASSIFIED •  
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THE BRITISH AND THE UNITED STATES GOVERNMENTS HAVE BEEN DISCUSSING THE POSSIBILITY OF THE USE OF DOG ISLAND AS A TARGET FACILITY FOR

PAGE 07 RUFNAAA31R1 UNCLAS  
NON-EXPLOSIVE ORDNANCE REQUIRED BY THE UNITED STATES NAVY FOR TRAINING PURPOSES. WITHIN THE CONTEXT OF THESE DISCUSSIONS, THERE HAS ALSO BEEN DISCUSSED THE POSSIBILITY OF THE PROVISION OF WATER AND ELECTRICITY TO THE INHABITANTS OF ANGUILLA. FURTHER CAREFUL STUDY WILL BE NEEDED OF THE ENVIRONMENTAL, TECHNICAL, SOCIOLOGICAL AND ECONOMIC FACTORS CONCERNED TO CONFIRM THE FEASIBILITY OF THIS PROJECT. DISCUSSIONS ARE CONTINUING.

THE COMMISSION WILL CONTINUE ITS WORK UNTIL A SUITABLE LOCATION SITE HAS BEEN ESTABLISHED."

3. REQUEST ACTION BE INITIATED TO TERMINATE THE RESIDUAL AIR-SPACE RESTRICTIONS OVER THE CULEBRA CAYS EFFECTIVE 30 SEPTEMBER 1975, VIA FAA. ACTION HAS BEEN INITIATED TO REVOKE EXECUTIVE ORDER 6684 OF FEBRUARY 1941 WHICH ESTABLISHED THE CULEBRA ISLAND NAVAL DEFENSIVE SEA AREA AND THE CULEBRA ISLAND NAVAL AIR-SPACE RESERVATION.

BT

#3191

NNNN

INFO: (AVENG, VFS, LOG, OPS, SDO, AFWTF(5), PLW, PAO CO X9

16

PACIFIC OCEAN AREA

Naval Communication Station, Harold E. Holt, Exmouth, Australia, \$1,192,000.

Naval Complex, Guam, Mariana Islands, \$10,988,000.

Naval Complex, Subic Bay, Republic of the Philippines, \$278,000.

POLLUTION ABATEMENT

Various Locations, Water Pollution Abatement, \$3,995,000.

Sec. 202. The Secretary of the Navy may establish or develop Navy installations and facilities by proceeding with construction made necessary by changes in Navy missions and responsibilities which have been occasioned by (1) unforeseen security considerations, (2) new weapons developments, (3) new and unforeseen research and development requirements, or (4) improved production schedules, if the Secretary of Defense determines that deferral of such construction for inclusion in the next Military Construction Authorization Act would be inconsistent with interests of national security, and in connection therewith to acquire, construct, convert, rehabilitate, or install permanent or temporary public works, including land acquisition, site preparation, appurtenances, utilities, and equipment, in the total amount of \$10,000,000: *Provided*, That the Secretary of the Navy, or his designee, shall notify the Committees on Armed Services of the Senate and House of Representatives, immediately upon reaching a decision to implement, of the cost of construction of any public work undertaken under this section, including those real estate actions pertaining thereto. This authorization will expire as of September 30, 1974, except for those public works projects concerning which the Committees on Armed Services of the Senate and House of Representatives have been notified pursuant to this section prior to that date.

Sec. 203. The Secretary of the Navy is authorized to acquire, under such terms as he deems appropriate, lands or interests in land (including easements) in approximately fourteen thousand acres of privately owned property contiguous to the airfield and approach corridors of the Marine Corps Air Station at Yuma, Arizona, as he considers necessary for the safe and efficient operations at such station. Acquisition of such land or interests in land shall be effected by the exchange of such excess land or interests in land of approximately equal value, as the Secretary of Defense may determine to be available for the purpose. If the fair market value of the land or interests in land to be acquired is less than the fair market value of the Government property to be exchanged, the amount of such deficiency shall be paid to the Government.

Sec. 204. (a) In order to facilitate the relocation of the ship-to-shore and other gun fire and bombing operations of the United States Navy from the island of Culebra, there is hereby authorized to be appropriated the sum of \$12,000,000 for the construction and equipage of substitute facilities in support of such relocation.

(b) The relocation of such operations from the northwest peninsula of the island of Culebra is expressly conditioned upon the conclusion of a satisfactory agreement to be negotiated by the Secretary of the Navy, or his designee, with the Commonwealth of Puerto Rico and reported to the Committees on Armed Services of the Senate and the House of Representatives prior to execution of such agreement. The agreement shall provide, among other things, that the Commonwealth of Puerto Rico shall insure that (1) Commonwealth lands suitable for carrying out operations of the type referred to in subsection (a) will be made available for the long term continued use of the Atlantic Fleet Weapons Range and Fleet Marine Forces training areas by the Navy, including, but not limited to, present areas and facilities on the island of Vieques, and (2) any proposed facility or activity which would interfere with the Navy training mission will not be undertaken, including the proposed deep water super-port on the island of Mona, in the event that

such agreement includes the use by the Navy of such island or the area adjacent to such island.

(c) Notwithstanding any other provision of law, the present bombardment area on the island of Culebra shall not be utilized for any purpose that would require decontamination at the expense of the United States. Any lands sold, transferred, or otherwise disposed of by the United States as a result of the relocation of the operations referred to in subsection (a) may be sold, transferred, or otherwise disposed of only for public park or public recreational purposes.

(d) The funds authorized for appropriation by this section shall remain available until expended.

Sec. 205. (a) Public Law 90-408, as amended, is amended under the heading "**Inside the United States**", in section 201 as follows: With respect to Navy Mine Defense Laboratory, Panama City, Florida, strike out "\$7,411,000" and insert in place thereof "\$9,397,000".

(b) Public Law 90-408, as amended, is amended by striking out in clause (2) of section 802, "\$239,682,000" and "\$246,547,000" and inserting in place thereof "\$241,668,000" and "\$248,533,000", respectively.

Sec. 206. (a) Public Law 91-511, as amended, is amended under the heading "**Inside the United States**", in section 201 as follows: With respect to Naval Weapons Laboratory, Dahlgren, Virginia, strike out "\$530,000" and insert in place thereof "\$770,000".

(b) Public Law 91-511, as amended, is amended by striking out in clause (2) of section 602 "\$246,955,000" and "\$274,093,000" and inserting in place thereof "\$247,204,000" and "\$274,342,000", respectively.

Sec. 207. (a) Public Law 92-145 is amended under the heading "**Inside the United States**", in section 201 as follows:

With respect to Naval Station, Norfolk, Virginia, strike out "\$19,316,000" and insert in place thereof "\$22,716,000".

With respect to Naval Air Station, Meridian, Mississippi, strike out "\$3,266,000" and insert in place thereof "\$3,859,000".

(b) Public Law 92-145 is amended by striking out in clause (2) of section 702 "\$266,068,000" and "\$321,843,000" and inserting in place thereof "\$270,061,000" and "\$325,836,000", respectively.

Sec. 208. (a) Public Law 92-545 is amended under the heading "**Inside the United States**" in section 201 as follows: With respect to Naval Ammunition Depot, McAlester, Oklahoma, strike out "\$6,336,000" and insert in place thereof "\$8,778,000".

With respect to Naval Air Station, Miramar, California, strike out "\$4,372,000" and insert in place thereof "\$5,144,000".

(b) Public Law 92-545 is amended by striking out in clause (2) of section 702 "\$474,450,000" and "\$515,667,000" and inserting in place thereof "\$477,664,000" and "\$518,881,000", respectively.

### TITLE III

Sec. 301. The Secretary of the Air Force may establish or develop military installations and facilities by acquiring, constructing, converting, rehabilitating, or installing permanent or temporary public works, including land acquisition, site preparation, appurtenances, utilities, and equipment, for the following acquisition and construction:

#### INSIDE THE UNITED STATES

#### AEROSPACE DEFENSE COMMAND

Peterson Field, Colorado Springs, Colorado, \$7,843,000.  
Tyndall Air Force Base, Panama City, Florida, \$1,020,000.

#### AIR FORCE COMMUNICATIONS SERVICE

Richards-Gebaur Air Force Base, Grandview, Missouri, \$3,963,000.

UNITED STATES GOVERNMENT  
memorandum

DATE: April 22, 1991  
REPLY TO: Kelly Wolcott, Refuge Manager, Culebra NWR, Culebra, PR  
00645  
SUBJECT: Contamination of Culebra by Navy Bombing  
TO: Ivan Acosta, US Army Corps of Engineers, PO Box 4970,  
Jacksonville, FL 32232

Ivan,

Sorry to have to delay this memo so much. We've been very busy with our own program, the approaching seabird season and the oil spill.

I've enclosed copies of a topographical map of Culebra including indications of the areas contaminated by unexploded ordinances. We don't have much information on the specifics of Navy bombing, we do have a little documentation. I've enclosed copies of one Navy document and will add to those comments below.

Northwest Peninsula: The 600-acre Northwest Peninsula was used primarily for shore bombardment centered on white-washed rocks along the shoreline, simulated gun emplacements, white-washed Sherman Tanks, and white-painted fuel drums. Target 14 was placed mid-peninsula for napalm and aircraft delivery of inert bombs and rockets. A wire "cyclone" fence and fire break delineated the southeast boundary of the bombardment area. From the present entrance to the tip of the peninsula the navy bombed from 1941 to 1975. There are areas of greater concentration of ordinances and other areas that although were used, were also cleaned regularly for public use. The greatest areas of concentration are indicated in one of the enclosed maps. The tip of the peninsula (Punto Molinos) has the greatest concentration of Sooty Terns found in the area.

Cayo de Agua or Aqua Cay: Cayo de Agua was used for offshore and aerial bombardment and has one of the greatest densities of observable ordinances. Most are heavily exposed and it is not known what percentage is live. Cayo de Agua was used extensively for night fire. Cayo de Agua hosts nesting Bridled Terns, Sooty Terns, Zenaida Doves, Red-billed Tropicbirds and Audobon's Shearwaters.

Cayo Lobo or Cross Cay: Cayo Lobo has two bunker observation posts and a series of tire targets presumably used for air to ground small arms fire or strafing. No large munitions are commonly found on the island. Cayo Lobo has no known concentration of nesting birds.

Cayo Alcarraza or Fungy Bowl: Cayo Alcarraza also has a high density of ordinances. It is a very steep island and is difficult and dangerous to work on. The island was used for all types of conventional ordinances. High and low-level radar bombing and searchlight target bombing. Cayo Alcarraza has the area's only colony of masked boobies and extensive colonies of Sooty Terns, Bridled Terns, Noddy Terns and Zenaida Doves.

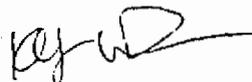
missiles. Loft and over-the-shoulder weapons delivery. The only target that received air to surface missiles with practice ordinances. Twin Rocks provides some roosting areas for seabirds.

Culebrita Island: Culebrita provided strafing targets on and offshore on the western end of the island at Botella Beach and live and dummy-warhead torpedos were fired at a sheer cliff face on the northwest side of the island (Marc Point). Culebrita island provides nesting beaches for Hawksbill Turtles and some nesting areas for red-billed Tropicbirds.

Cayo Tiburon or Shark Key: Small, unvegetated rock with little or no public use. Extensively used as a roost by nesting seabirds. Target was used for all heavy conventional ordinance, live and inert.

Cayos Geniqui or Palada Cays: Two vegetated islands, both used all year by nesting Brown and Red-footed Boobies. Geniqui was also used for all types of heavy conventional ordinance.

Cayo Botella or Cayo Ladron: A flat, vegetated Key near Culebrita with no known seabird nesting. Before Navy bombardment, the key was extensively used by Sooty Terns.



Kelly Wolcott  
Refuge Manager  
Culebra NWR, Box 190  
Culebra, PR 00645

# CULEBRA NATIONAL WILDLIFE REFUGE

CULEBRA ISLAND GROUP—PUERTO RICO

FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE

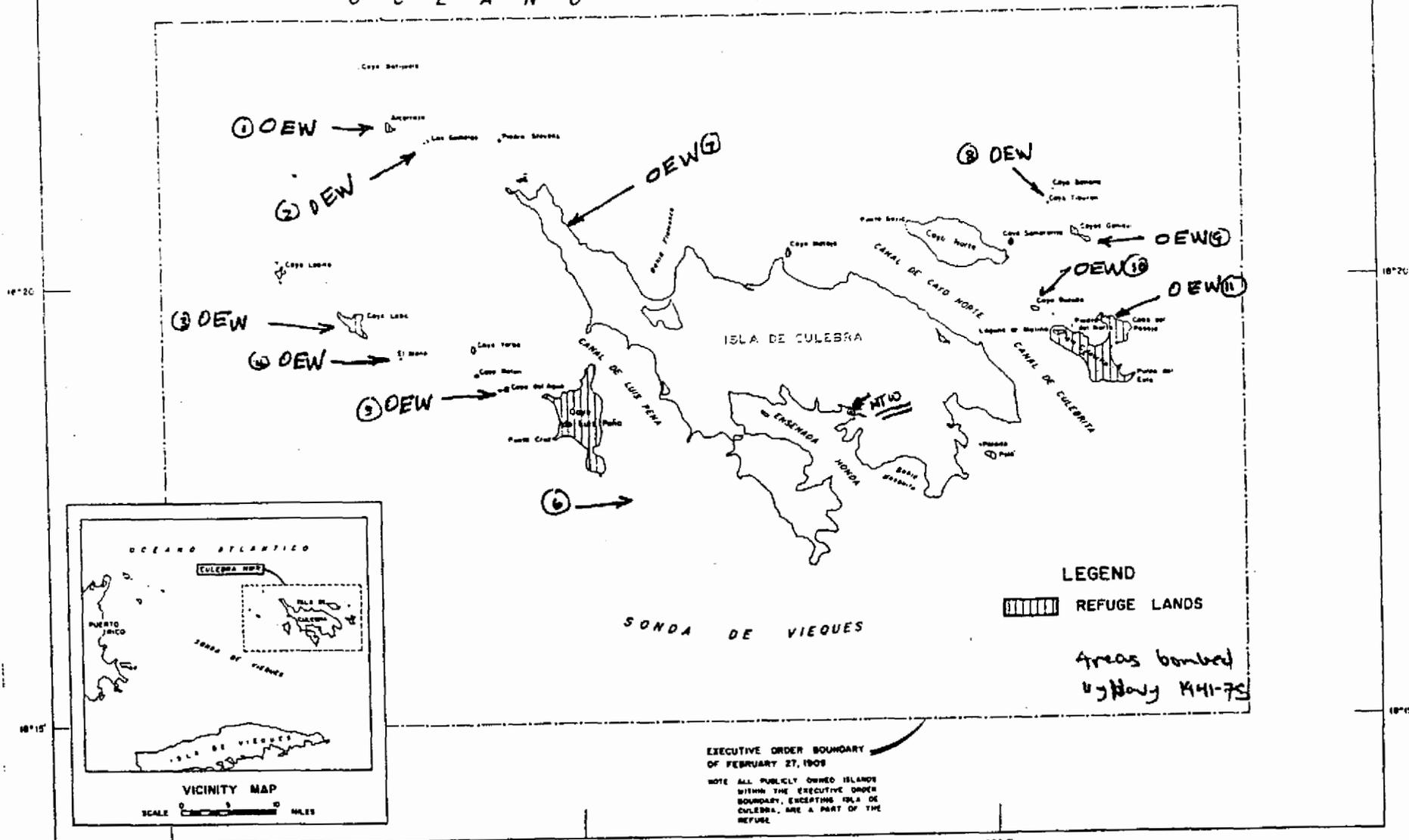
UNITED STATES  
DEPARTMENT OF THE INTERIOR

85°25'

85°20'

85°15'

O C E A N O A T L A N T I C O



85°25'

85°20'

85°15'

COMPILED IN THE DIVISION OF REALTY  
FROM SURVEYS BY USGS

Scale 0 2500 5000 10000 15000 20000 FEET  
0 1/2 1 2 3 4 MILES

ATLANTA, GEORGIA

APRIL, 1969

MEAN  
DECLINATION  
1969

4R-PR-52-403

**SECRET**

WAR DEPARTMENT  
THE ADJUTANT GENERAL'S OFFICE  
WASHINGTON

COPY NO. 10

AG 662 (8-14-42)MS-E-M

10164

LNH/bjs-1705

September 9, 1942

SUBJECT: Priorities for Seacoast Batteries.

TO: The Commanding Generals,  
Services of Supply;  
Eastern Defense Command;  
Western Defense Command;  
Central Defense Command;  
Southern Defense Command;  
Caribbean Defense Command;  
Hawaiian Department;  
Chief of Ordnance;  
Chief Signal Officer; and  
Chief of Engineers.

SECRET  
Auth: T. A. G.  
Initials: *[Handwritten]*  
Date: 9-9-42.

Inclosed for your information is the approved priority list for seacoast batteries for the current construction program.

By order of the Secretary of War:

*[Signature]*  
T. A. ULIO  
Major General,  
The Adjutant General.

1 Incl.  
Approved priority list,  
seacoast batteries, Re-  
vised, August 14, 1942.

*11/17/42 - See Om-19282, this file, in connection w/this paper (seacoast batteries). LNH*

*Also Om-21226 - Copy E 662-1273*

**SECRET**

**SECRET**

NEW 16-INCH BATTERIES

Revised August 14, 1942

1	2	3	4	5
Recommended Priority No.	Old Priority No.	Construction No.	Harbor Defense	Location
1	1	108	Narr. Bay	Ft. Greene
2	2	120	Ches. Bay	Ft. Story
3	3	118	Delaware	Ft. Miles
4	4	122	Ches. Bay	Ft. Custis
5	5	113	Long Is. Sd.	Ft. Hero
6	6	116	New York	Navesink
7	7	131	Puget Sd.	Striped Peak
8	8	127	Los Angeles	Ft. Fernin
9	9	126	San Diego	Ft. Rosecrans
10	10	104	Boston	E. Pt. Nahant
11	11	121	Ches. Bay	Ft. Story
12	12	112	Long Is. Sd.	Ft. Hero
13	15	102	Portland	Peak Island
14	16	103	Portsmouth	Frost Point
15	17	109	Narr. Bay	Ft. Greene
16	18	132	Puget Sd.	Cape Flattery
17	23	111	Long Is. Sd.	Wilderness Pt.
18	20	105	Boston	Ft. Dawes
19	21	129	San Francisco	Ft. Barry

DEFERRED BATTERIES

20	13	152	Roosevelt Rds.	Ft. Mata Redonda
21	14	153	Roosevelt Rds.	Mt. Pirata
22	22	154	Roosevelt Rds.	Mt. Jalcobra
23	23	155	Roosevelt Rds.	Pt. Lima
24	24	134	San Diego	Coronado Hts.
25	25	128	Los Angeles	Sunset Beach
26	26	110	Narr. Bay	Beavertail
27	27	123	Ches. Bay	Cape Charles
28	35	114	Long Island Sd.	Watch Hill
29	29	130	San Francisco	Milagra Ridge
30	30	125	Charleston	James Island
31	31	119	Delaware	Cape Henlopen
32	32	106	Boston	Fourth Cliff
33	33	101	Portland	Cape Elizabeth
34	34	133	Puget Sd.	Cape Flattery
35	19	117	Sandy Hook	Jamaica Sea Airport
36	36	124	Ches. Bay	Ft. Monroe
37	37	151	Panama	Ft. Sherman

~~SECRET~~

NEW 6-INCH BATTERIES  
Revised August 14, 1942

Req. No.	Old Battery No.	Construction No.	Harbor Defense	Location
1	1	285	Ches. Bay	Ft. Stacey
2	2	291	Boston Harbor	Older Point
3	3	292	Norfolk	Long Island
4	4	293	Sitka	Blorka Island
5	5	252	Argentina	Hill 295
6	6	294	Seaward	Rugged Island
7	7	290	Sitka	Phoca Point
8	8	293	Sitka	Naknati Island
9	9	291	Argentina	Argentina North
10	10	292	Seaward	Chisoe Head
11	11	293	San Juan	Ingrejos Pt.
12	12	294	San Juan	Pt. Salinas
13	13	295	Bermuda	Wire Hill
14	14	296	Bermuda	Pt. Victoria
15	15	297	San Juan	Congrajos Pt.
16	16	298	San Juan	E. Is. Pt. Salinas
17	17	299	Yankee Bay	Armid Rock
18	18	300	Yankee Bay	Ida
19	19	301	Narr. Bay	Ft. Judith
20	20	302	Narr. Bay	Harven Pt.
21	21	303	Long Is. Sd.	Ft. Hera
22	22	304	New York	Massink
23	23	305	Delaware	Cape Henlopen
24	24	306	Long Is. Sd.	Free Point
25	25	307	San Diego	Pt. Rosecrans
26	26	308	Portland	Pease Island
27	27	309	Ches. Bay	Fisherman Is.
28	28	310	Boston	Water Brewhouse
29	29	311	Page Sd.	Vartridge Point
30	30	312	San Diego	Colorado Heights
31	31	313	Delaware	Cape Henlopen
32	32	314	Gulveston	Pt. San Jacinto
33	33	315	Los Angeles	Pt. Vicente
34	34	316	Narr. Bay	Beavertail
35	35	317	Boston	Ft. Dawes
36	36	318	San Diego	Pt. Rosecrans
37	37	319	Boston	E. Pt. Nahant
38	38	320	New Bedford	Ft. Rodman
39	39	321	Charleston	Ft. Moultrie
40	40	322	Columbia	McKensie Head
41	41	323	Delaware	Cape May
42	42	324	Portland	Jewell Island

~~SECRET~~  
 NEW 6-INCH BATTERIES (Continued)

1	2	3	4	5
Recommended Priority No.	Old Priority No.	Construc- tion No.	Harbor Defense	Location
43	48	204	Portsmouth	Odiornes Pt.
44	49	265	Roosevelt Rds.	Pineros Island
45	50	267	Roosevelt Rds.	Mt. Pirata
46	51	266	Roosevelt Rds.	Pt. Mala
47	52	268	Roosevelt Rds.	Pt. Lima
48	53	312	Roosevelt Rds.	Culebra Is. NW Pt.
49	54	313	Roosevelt Rds.	Culebra Is.
50	55	314	Roosevelt Rds.	Dolphin Head Water Island, St. Thomas
51	56	311	Roosevelt Rds.	Cape San Juan
52	57	315	Roosevelt Rds.	Hill 411, St. Thomas
53	58	285	Roosevelt Rds.	East End Vieques Island
54	59	226	Chesapeake Bay	Ft. Story
55	60	208	Boston	Fourth Cliff
56	61	220	New York	Ft. Tilden
57	62	249	Puget Sound	Tongue Pt.
58	63	245	Columbia	Ft. Stevens
59	64	205	Portsmouth	Nr. Ft. Foster
60	65	233	Pensacola	Ft. MacRae
61	66	242	Los Angeles	Sunset Beach
62	75	232	Key West	Salt Pond
63	68	217	Long Is. Sd.	Ft. Terry
64	69	218	New York	Ft. Wadsworth
65	70	241	Los Angeles	Ft. MacArthur
66	71	243	San Francisco	Ft. Miley
67	72	229	Ches. Bay	Ft. Wool
68	73	246	Columbia	Ft. Columbia
69	74	236	Galveston	Ft. Travis
70	67	231	Key West	Ft. Taylor
71	76	234	Pensacola	Ft. Pickens
72	77	228	Ches. Bay	Cape Charles
73	78	250	Puget Sd.	Koistlah Point
74	79	214	Long Is. Sd.	Wilderness Pt.
75	80	251	Puget Sd.	Ocean Creek
76	81	201	Portland	Cape Elizabeth
77	82	244	San Francisco	Milagra Ridge

~~SECRET~~

COMMANDER SUBMARINE FORCE  
U.S. ATLANTIC FLEET  
NAVY  
NEW YORK

8510  
SENT 12/019  
18 Nov 1959

REGISTERED MAIL

From: Commander Submarine Force, U.S. Atlantic Fleet  
To: Commander Submarine Squadron TWO

Subj: Conduct of Biennial Warshot Tests (U)

Ref: (a) CINCLANTFLT Instruction 08500.1A  
(b) COMSUBLANT ltr ser 42/01166 of 10 Nov 1959 (NOTAL)

1. Reference (a) directs Commander Submarine Force, U.S. Atlantic Fleet, to conduct warshot tests every two years to determine the readiness of current service weapons and provides general guide lines for the preparation of detailed instructions. Part of these tests will be conducted during the SPRINGBOARD 60 period at the island of CAYOS GENIQUI off Puerto Rico.

The following service weapon tests are authorized to be conducted:

<u>Torpedo</u>	<u>Number</u>
Mk 14-3A	2
Mk 16-6	2
Mk 16-7	2
Mk 27-4	4
Mk 28-3	4
Total	14

In the event that a dud should occur, an ASR should be present with an explosive ordnance disposal team embarked. It is therefore desirable to concentrate firings in such a way as to utilize profitably the ASR and EOD team. Commander Submarine Squadron TWO should promulgate specific instructions in the event a dud should occur. It is generally desirable to suspend firings for 24 hours in order to provide time for dud recovery.

The object of these tests is to determine the reliability of the exploder and explosive train. It is therefore important that a hit be obtained. In the past torpedoes have

~~CONFIDENTIAL~~

18 Nov 1959

...the comparative... of 0.005...  
...positive firing... accuracy...  
...of current. It is considered... a firing range...  
...of 1000 yards is appropriate.

4. In the interest of safety, all acoustic weapons fired at the island of CAYOS GENIQUI should have acoustic homing features disconnected. In order to insure that exploder firing voltage is available at time of impact, the torpedo must enable prior to impact. Torpedo running depth should be shallow enough to prevent hitting bottom, but deep enough to prevent broaching. Recommended running depth setting is 40 feet for AUV torpedoes.

5. Commander Caribbean Sea Frontier is requested, by copy of this letter, to provide the following services to facilitate the conduct of the tests:

- a. Arrangements for the use of the CAYOS GENIQUI area.
- b. Aerial observation, and aerial/shipboard photography.

6. Commander Mine Force, U.S. Atlantic Fleet, is requested, by copy of this letter, to provide the service of an EOD team during the scheduled firings.

7. In reference (b), COMSUBLANT has requested that two units each of Torpedoes Mk 26 Mod 2 and Mk 37 Mod 0 be added to the service weapons tests to be fired by SEADRAGON (SS(N) 584).

  
B. WARDER

- |                    |                           |
|--------------------|---------------------------|
| Copy 101           |                           |
| CNO (10311)        | COMSUBDIV 21              |
| SECDEF (102)       | COMSUBDIV 22              |
| CINCPACFLT         | SUBASE WLO                |
| COMSUBLANT         | USS SARD (SS485)          |
| COMNAVSEAFRON (10) | USS CHEVY (SS501)         |
| COMINCPAC (8)      | USS SEADRAGON (SS(N) 584) |
| COMSUBRON EIGHT    | USS SKYLARK (ASG 20)      |
| COMSUBRON TEN      | USS TRINCA (ASG 6)        |

008  
8010  
Ser 628

21 June 1978

From: Commander U.S. Naval Forces, Caribbean  
To: The Adjutant General, Puerto Rico National Guard  
Subj: Alleged Storage of Live Ammunition on Culebra Island  
Ref: (a) PR National Guard ltr of 2 June 1978, same subject

1. Reference (a) advised this command of the existence of live ammunition in a building on Culebra and requested U.S. Navy assistance in disposing of the ordnance. We were advised of a similar incident in August 1976. Our investigation revealed that 21 pieces of ordnance had been collected by an official of the Culebra Conservation and Development Authority from the former impact area and stored at the Lower Camp. This ammunition was disposed of by U.S. Navy EOD personnel. Apparently, additional ordnance has been collected and stored there as the Lower Camp was free of ordnance when the U.S. Navy terminated operations on Culebra.

2. Section 204 of Public Law 93-156, which provided for the relocation of U.S. Navy bombardment from Culebra, expressly prohibits expenditure of U.S. Government funds for decontamination of the former impact area. Because of this restriction we are unable to dispose of any ordnance found there.

3. The practice of collecting and stacking ordnance ~~found on the impact~~ area is extremely dangerous. When ordnance is found, it should not, in any way, be disturbed until it has been inspected and made safe by a fully qualified ordnance disposal technician. It is recommended that the appropriate Commonwealth agencies be counseled in this regard to preclude an unfortunate accident. I will be glad to meet with you and determine what actions can be taken.

W.R. Hanson

*Levy*

21 January 1983

MEMORANDUM

From: N3  
To: 004 ←  
008

Subj: Unexploded Ordnance Vcty Culebra

1. In late December I received word from Mr. Peter Hiebel that he had discovered what appeared to be unexploded ordnance while SCUBA diving in waters off Culebra. I notified CWO4 Pye (OIC EODGRUTWO Det Roosevelt Roads) of Mr. Heibel's discovery, and requested that he investigate. On 18 Jan, Mr. Heibel pinpointed (for CWO4 Pye) the location of the ordnance on a marine navigation chart (see attached).

2. On 19 Jan, an EOD team headed by CWO4 Pye went to the area via AFWTF SEPTAR and found the following at a depth of approximately 60 feet, in the area pointed out by Mr. Heibel:

- One MK-15 Drill Torpedo
- One Piece of Torpedo Casing
- One MK-27 Torpedo
- Three 500 Pound Bombs

3. According to CWO4 Pye, there is a significant risk that the MK-27 and the 500 pound bombs are live, and could be detonated by divers/boaters that frequent the area. Consequently, I have the following questions:

a. Is there any legal reason that these objects should not be disposed of by the Navy? (Disposal would involve exploding them. No effects would be obvious above the surface).

b. If the answer to question "A" is "Yes," Do we have any obligation to notify/warn anyone concerning the danger?

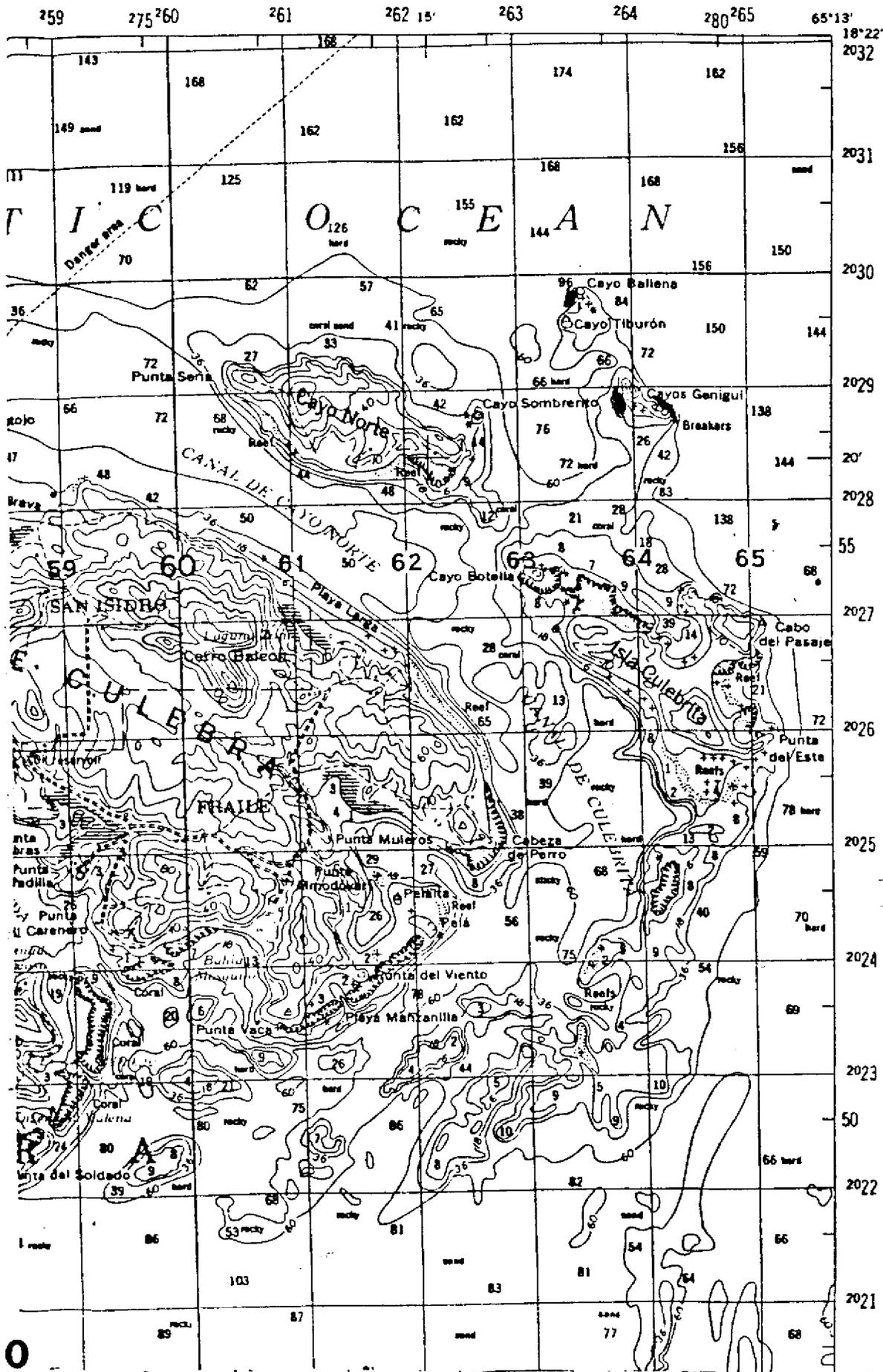
c. If the answer to question "A" is "No," Are there any "Unusual" steps (besides normal clearance from SUBLANT for underwater detonation, and notice to mariners) that must be taken (such as notifying any Commonwealth officials, Dept of Natural Resources, EQB, etc.) before this disposal takes place?

Very respectfully,

*T. A. Rocklein*

T. A. ROCKLEIN  
LCDR USN

Copy to:  
00  
01  
003



ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX G

REAL ESTATE DOCUMENTS

APPENDIX G  
REAL ESTATE DOCUMENTS

Table of Contents

- G-1. Letter & map about federal property (B-79).
- G-2. 1982 Quitclaim deed to DNR (B-69).
- G-3. 1980 Quitclaim deed to PR (B-68).
- G-4. 1980 Quitclaim deed to airport (B-66).



DEPARTMENT OF THE NAVY  
COMMANDER U.S. NAVAL ACTIVITIES, CARIBBEAN  
FPO MIAMI 34051-8000

PINK

11011  
Ser 008/ 1234  
9 NOV 1988

Hon. Justo A. Méndez  
Secretary of Natural Resources  
Commonwealth of Puerto Rico  
P.O. Box 5887  
Puerta de Tierra, Puerto Rico 00906

Dear Mr. Méndez:

This is in response to your letter of 17 October 1988 wherein you inquire on the availability of maps which could assist you in surveying former Navy property in Culebra Island.

A search of our files, those of Naval Station Roosevelt Roads, and the cadastral records of our Real Estate Division in Norfolk provides no indication of the Navy ever surveying all of the U.S. Government property in Culebra. Several parcels and portions of the shoreline were surveyed and I have enclosed copies of these maps for your use. In addition, I have enclosed a Puerto Rico Ports Authority survey of the Culebra Airport site.

Please do not hesitate to contact me if I can be of further assistance.

Sincerely,

J. A. MORIARTY  
Rear Admiral, U.S. Navy  
Commander

Encl:

- |                        |  |
|------------------------|--|
| (1) P.W. Dwg. No. 1994 | Parcel No. 87  |
| (2) P.W. Dwg. No. 2741 | Resaca Parcel No. 90                                       |
| (3) P.W. Dwg. No. 2742 | Parcels Nos. 42, 48, 49                                    |
| (4) P.W. Dwg. No. 2744 | Parcels "Snug" and "Seine"                                 |
| (5) P.W. Dwg. No. 2747 | Parcels Acquired for Gun Mounts                            |
| (6) P.W. Dwg. No. 2946 | Additional Lands to be Acquired at<br>Culebra Island, 1949 |
| (7) PRPA Dwg. No. 664  | Property, Map - Culebra Airport<br>Site                    |

*Package filed in the other  
files*

2 Nov 88

From: Staff Civil Engineer (Code 008)  
To: Chief of Staff (Code 01)

Subj: FORMER NAVY PROPERTY ON CULEBRA ISLAND

Encl: (1) Map

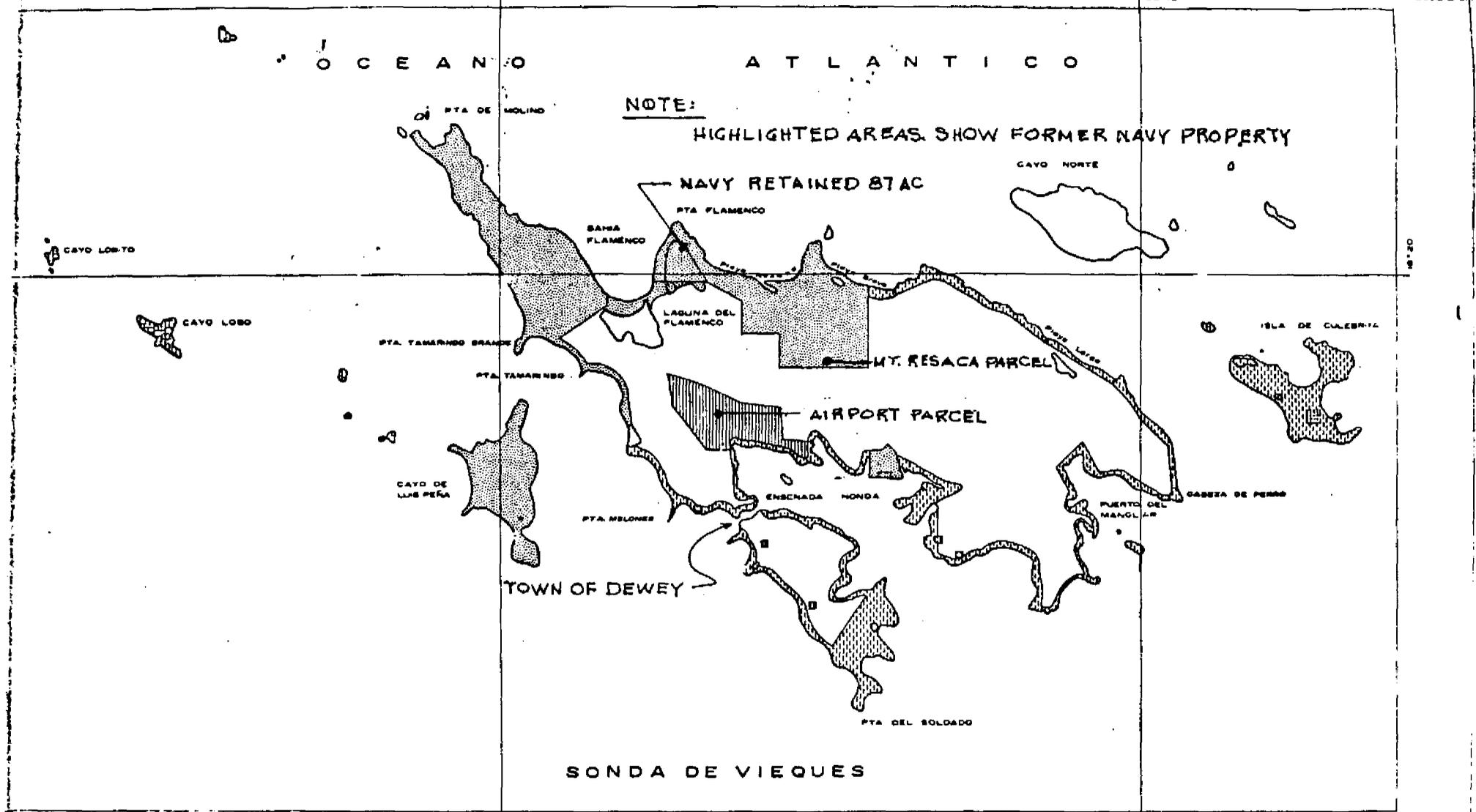
1. Most of the Navy excess property in Culebra Island shown on enclosure (1) was conveyed to the Commonwealth of Puerto Rico. Per the basic letter, DNR is presently conducting a survey to define the boundaries of the Commonwealth property. Their only reference is a Spanish Crown map dated 1887 which is not accurate for such purpose; thus their request for Navy assistance.
2. Indications are that the Navy surveyed portions of its property in 1908, as evidenced by concrete monuments engraved "U.S. Navy - 1908" that were seen by the undersigned in the Mt. Resaca area in 1974. In 1947 the Navy surveyed and recorded on drawings the Mt. Resaca Parcel, as well as portions of the shoreline. These drawings are available and can be provided to the Secretary.
3. A draft reply letter, which is self-explanatory, is attached for your review.

Very respectfully,

  
A. FRONTERA

DE TERMINADO EL ANHEJAMIENTO

LOWAN TERMINATION OF LEASE



CULEBRA E ISLAS ADYACENTES

Small text at the bottom left corner, likely a reference or source note.

TERRENOS FEDERALES EN CULEBRA  
FEDERAL LAND IN CULEBRA

copy COURTESY OF DEPT OF NATURAL RESOURCES 1/28/83

QUITCLAIM DEED

12/20/82

*af*

The UNITED STATES OF AMERICA, acting by and through the Secretary of the Interior, under and pursuant to the power and authority contained in the provisions of the Puerto Rico Organic Act of March 2, 1917, as supplemented by Executive Order No. 10250 of June 5, 1951, as amended, hereinafter called the "Grantor," for and in consideration of \$1.00 and other valuable considerations, receipt whereof is hereby acknowledged, does hereby release and quitclaim to the Commonwealth of Puerto Rico, hereinafter called the "Grantee," and to its successors and assigns, subject to the reservations, exceptions, restrictions, conditions and covenants hereinafter expressed and set forth, all Grantor's right, title and interest in and to the following described property, consisting of approximately 935.98 acres, located on the Isla De Culebra, Commonwealth of Puerto Rico:

TRACT (1b)

TO DNR

COASTLINE ISLANDS LOTS 54 & 62 INCLUSIVE PLUS PORTION OF N.W. PENINSULA

BEGINNING at the most westerly corner of Lot 54, as shown on the "Plan of the Island of Culebra and its Division in Lots," dated October 8, 1887; thence SOUTHEASTERLY, with the southwest boundary of Lots 54, 55, 56, 57, 58, 59, 60, 61, and 62 to the south corner of said Lot 62, common to Lot 80; thence SOUTHWESTERLY, with an extension of the line separating Lots 62 and 80, to the mean high tide line on Bahía de Sardinias; thence NORTHWESTERLY, with the mean high tide line of Bahía de Sardinias, Vieques Sound, Bahía Tamarindo, Luis Pena Channel and the Atlantic Ocean to a point in Lot 91 on Flamenco Peninsula; thence N. 64° E., crossing said Lot 91 and Flamenco Peninsula, approximately 1,250 feet to the mean high tide line on the Atlantic Ocean, a point which bears N. 46° 40' W., 5,890 feet from the north corner of Lot 54; thence SOUTHEASTERLY, with the mean high tide line of the Atlantic Ocean to an intersection with the extension of the line separating Lots 54 and 91; thence SOUTHWESTERLY, with said extension and with the line separating Lots 54 and 91 to the PLACE OF BEGINNING, containing 438.54 acres, more or less.

TRACT (1c)

NE COASTLINE PLUS COASTLINE OF LOT 90 (PLAYA RESACA PLAYA BRAVA RAYA LARGA)

BEGINNING at the southeast corner of Lot 77, as shown on the "Plan of the Island of Culebra and its Division in Lots," dated October 8, 1887; thence NORTHWESTERLY, with the northeast boundary of Lots 77, 30, 29, 16, 78, 4 and 37, to the northwest corner of Lot 37; thence NORTHERLY, with an extension of the west boundary of Lot 37, to the south boundary of the Salvage Zone on the Atlantic Ocean, said south boundary being 20 meters distant from the mean high water tide line of the Atlantic Ocean; thence WESTERLY, with said south boundary of the Salvage Zone, as it meanders with Playa Brava, Point Resaca and Playa Resaca, to an intersection with a northerly extension of the east boundary of Lot 45; thence SOUTHERLY, with said extension of the east boundary of Lot 45, to the east corner of Lot 50, common to the northeast corner of Lot 45; thence NORTHWESTERLY, with the north boundary of Lot 50, 638 meters to a point; thence N. 24° 00' 00" E., approximately 70 meters to the mean high tide line on the Atlantic Ocean; thence EASTERLY and SOUTHEASTERLY, with said mean high tide line, to an intersection with the extension of the south boundary of Lot 77; thence WESTERLY, with said extension to the PLACE OF BEGINNING, containing 96.97 acres, more or less.

TRACT (1g)

SOUTHWEST  
COASTLINE  
7 PUEBLO  
18 LAS  
VACAS

BEGINNING at the northwest corner of Lot 73, as shown on the "Plan of the Island of Culebra and its Division in Lots," dated October 8, 1887, said corner being located West, 94 meters from the corner common to Lots 72 and 73; thence SOUTHEASTERLY, with the west and south boundaries of Lots 73, 10, 22, 74, 75 and 23, to the southwest corner of Lot 76; thence SOUTHEASTERLY, with an extension of the line separating Lots 23 and 76, to the mean high tide line on the Caribbean Sea; thence SOUTHWESTERLY and NORTHWESTERLY, with said mean high tide line on the Carribbean Sea and Ensenada Honda to an intersection with an extension of the northwest boundary of Lot 73; thence EAST, with said extension of the northwest boundary of Lot 73 to the PLACE OF BEGINNING, containing 31.09 acres, more or less.

TRACT (1h) (GUN MOUNT, TRACT # 5, Navy, Aug # 1942398)

A part of Lot 73, as shown on the "Plan of the Island of Culebra and its Division in Lots," dated October 8, 1887, situate in the Ward of Fraile near the south coast of Culebra Island, being more particularly described as follows:

BEGINNING at a point on the beach one hundred and fifteen (115) feet, eight (8) inches and forty (40) degrees West of North of the center of the gun mount for the six (6) pounder gun, now or formerly located on the western side of said Lot No. 73; thence two hundred and fifty (250) feet, forty (40) degrees North of East; thence three hundred (300) feet, forty (40) degrees East of South; thence one hundred and nineteen (119) feet, forty (40) degrees South of West to the beach and thence along the beach in a westerly direction to the POINT OF BEGINNING, containing 1.25 acres, more or less.

TRACT (1i) (GUN MOUNT # 4)

A part of Lot 73, as shown on the "Plan of the Island of Culebra and its Division in Lots," dated October 8, 1887, situate in the Ward of Fraile near the south coast of Culebra Island, being more particularly described as follows:

BEGINNING at a point one hundred and eleven (111) feet, nine (9) inches, four (4) degrees and thirty (30) minutes South of West, and one hundred and sixty-four (164) feet, four (4) degrees and thirty (30) minutes West of North of the center of the gun mount for the five (5) inch gun, now or formerly located on the western side of said Lot No. 73; thence three hundred and twenty-eight (328) feet, four (4) degrees and thirty (30) minutes East of South; thence three hundred and twenty-eight (328) feet, four (4) degrees and thirty (30) minutes North of East; thence three hundred and twenty-eight (328) feet, four (4) degrees and thirty (30) minutes West of North; thence three hundred and twenty-eight (328) feet, four (4) degrees and thirty (30) minutes South of West to the POINT OF BEGINNING, containing 2.50 acres, more or less.

TRACT (1k)

All of Lots 85, 86, 87 and those lands shown as "PUEBLO" and "Terrenos del Ramo de Guerra," as each are shown on the "Plan of the Island of Culebra and its Division in Lots," dated October 8, 1887, and all more particularly described as follows:

LOTS 85, 86, 87  
ENSENADA  
HONDA

BEGINNING at the corner common to Lots 85, 80 and 62; thence NORTHWESTERLY, with the west boundary of Lot 85 common to Lots 62 and 61 to the corner common to Lots 85, 61, 60, 49 and 86; thence EASTERLY, with the north boundary of Lot 86 common to Lots 49, 41, 38 and 70 to the south corner of said Lot 70; thence NORTHEASTERLY, with part of the west boundary of "Terreno del Ramo de Guerra," common to Lot 70 and with the north boundary of "PUEBLO" common to Lot 70, to the northeast corner of "PUEBLO"; thence SOUTHEASTERLY, with the

east boundary of "PUEBLO" common to Lot 71, to the mean high tide line on Ensenada Honda; thence WESTERLY and SOUTHERLY, with the mean high tide line on Ensenada Honda to an intersection with the extension of the line separating Lots 62 and 80; thence SOUTHWESTERLY, with said extension of the line separating Lots 62 and 80 to the PLACE OF BEGINNING, containing 109.48 acres, more or less.

TRACT (1m)

LL COAST LINE  
PENINSULA  
FULLADOSE  
TO INCLUDE  
ENTIRE Lot 92

BEGINNING at the northwest corner of Lot 63, according to the "Plan of the Island of Culebra and its Division in Lots," dated October 8, 1887, a corner common to Lot 80 lying near Playa de Sardinas or Bahia de Sardinas; thence SOUTHEASTERLY, with the southwest line of Lots 63, 64, 65, 66, 67, 68 and 69, to the south corner of Lot 69; thence NORTHEASTERLY, with the line separating Lots 69 and 92, to the northeast corner of Lot 69; thence WESTERLY, NORTHERLY and NORTHWESTERLY, with the northeasterly line of Lots 69, 68, 67, 66, 65, 64 and 63, to the north corner of Lot 63 common to Lot 80; thence NORTHEASTERLY, with an extension of the line separating Lots 63 and 80, to the mean high tide line on Ensenada Honda; thence SOUTHEASTERLY, with said mean high tide line on Ensenada Honda, to Punta de Soldado; thence NORTHWESTERLY, with the mean low tide line on Vieques Sound, to an intersection with an extension of the line separating Lots 63 and 80; thence NORTHEASTERLY, with said extension of the line separating Lots 63 and 80, to the PLACE OF BEGINNING, containing 248.35 acres, more or less.

TRACT (1n)

(Gun mount, Navy Dec. # 3)

A part of Lot 63, as shown on the "Plan of the Island of Culebra and its Division in Lots," dated October 8, 1887, situate in the Ward of Playa Sardinas II on the southwestern part of Culebra Island, being more particularly described as follows:

Lot 63

BEGINNING at a point one hundred and sixty-four (164) feet, thirty-five (35) degrees North of East and one hundred and fourteen (114) feet, thirty-five (35) degrees West of North of the center of the gun mount for the five (5) inch gun, now or formerly located on the western side of said Lot No. 63; thence three hundred and twenty-eight (328) feet; thence thirty-five (35) degrees South of West; thence three hundred and twenty-eight (328) feet, thirty-five (35) degrees East of South; thence three hundred and twenty-eight (328) feet, thirty-five (35) degrees North of East and thence three hundred and twenty-eight (328) feet, thirty-five (35) degrees West of North to the POINT OF BEGINNING, containing 2.47 acres, more or less. *Position of gun mount and entrance to beach*

TRACT (1p)

(Gun mount # 2)

A part of Lot 62, as shown on the "Plan of the Island of Culebra and its Division in Lots," dated October 8, 1887, situate in the Ward of Playa Sardinas on the southwestern part of Culebra Island, being more particularly described as follows:

BEGINNING at a point on the beach thirty-seven (37) feet East and three hundred and seventy (370) feet south of the center of the gun mount for the four (4) inch gun, now or formerly located on the eastern side of said Lot No. 62, thence North four hundred and fifty-three (453) feet; thence West three hundred (300) feet; thence thirty-two (32) degrees West of South one thousand and thirty (1030) feet to the beach and thence along the beach in an easterly direction to the POINT OF BEGINNING, containing 5.33 acres, more or less.

The above described 9 tracts of land are delineated on a map of the Island of Culebra, dated January, 1975, of record in the files of the Commonwealth of Puerto Rico and the U. S. Department of the Interior.

There are excepted from this conveyance and reserved to the Grantor, and its assigns, all oil, gas, and other minerals in, under and upon the lands herein conveyed, together with the rights to enter upon the land for the purpose of mining and removing the same.

Reserving unto the Grantor and its assigns a perpetual and assignable easement in, upon, over and across the lands described above for ingress and egress to and from the area generally known as Flamenco Point, and further reserving unto the Grantor a perpetual and assignable easement and right-of-way to locate, construct, operate, maintain, and repair a roadway and utility lines, in, upon, over and across the lands described above, together with the right to trim, cut, fell and remove therefrom all trees, underbrush, obstructions, and any other vegetation, structures, or obstacles within the limits of the right-of-way; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines; reserving, however, to the Grantee, its heirs, executors, administrators, successors, and assigns the right to use the surface of such land as access to their adjoining land.

The following rights and/or privileges are reserved unto the Grantor as long as there is a military requirement for the fenced Operations (Microwave) Site at Flamingo Point:

- a. Reservation by the Grantor of the right to use the boat ramp and pier facility (also known as LST Loading Ramp and Small Craft Berthing), situate in the Camp Area, on a joint basis for the purpose of loading and/or unloading of materials, personnel, equipment, supplies, and any other property in connection with activities at its Operations Site.
- b. Reservation by the Grantor of the right to use such back-up land and/or facilities (situate in the Camp Area) as may be reasonable and necessary for the temporary storage of materials, personnel, equipment, supplies and other property, pending transfer to the Operations Site, and conversely, the right to use such land and/or facilities, as reasonable and necessary, for the movement of materials, personnel, equipment, supplies, and other property from the Operations Site to the Camp Area for loading of vessels and/or crafts docked at the pier, said backup land area to be as large as reasonable and necessary for the purposes intended but in no event to exceed 100 feet on either side of both access roads to the boat ramp and pier facility and to extend beyond a distance of 450 feet from the water.
- c. Reservation by the Grantor of the right to use such roadways, situate in the Camp Area, as is reasonable and necessary for purposes of ingress and egress in connection with the above operations."

This conveyance is made subject to any and all existing rights-of-way, easements and covenants and agreements affecting the above described premises, whether or not the same now appear of record.

To Have and to Hold the hereinbefore described property, subject to the reservations, exceptions, restrictions, conditions and covenants herein expressed and set forth unto the Grantee, its successors and assigns, forever.

It is agreed and understood by and between the Grantor and Grantee, and the Grantee by its acceptance of this Deed, does acknowledge its understanding of the agreement, and does covenant and agree for itself, and its successors and assigns forever as follows:

1. This property shall be used and maintained in compliance with the restrictions, covenants and conditions contained herein and for the purposes set forth in a cooperative agreement entitled "Cooperative Management Agreement for the Conservation and Development of Natural and Cultural Resources on the island of Culebra."

2. The property shall not be sold, leased, assigned, or otherwise disposed of except as the Secretary of the Interior agrees in writing shall assure the continued use and maintenance of the property for the purposes hereinabove described subject to the same terms and conditions of the Cooperative Management Agreement and in the original instrument of conveyance. However, nothing in this provision shall preclude the Grantee from providing related facilities and services through concession agreements entered into with third parties, provided prior concurrence to such agreements is obtained in writing from the Secretary of the Interior.

12/6  
3. Grantee agrees that a notice of Proposed Construction or Alteration, FAA Form 7460-1 must be filed with the FAA for proposed structures to be placed on Lot 86 that are not shielded from the airport by natural terrain of equal or greater height and required under criteria contained in FAR Part 77, paragraph 77.13. It is further understood, should the FAA determine any proposed structure to be a hazard to air navigation, such structure will not be constructed.

4. From the date of this conveyance, the Grantee, its successors, and assigns, shall submit biennial reports to the Secretary of the Interior, setting forth the use made of the property during the preceding two year period, and other pertinent data establishing its continuous use for the purposes set forth above, for ten consecutive reports and as further determined by the Secretary of the Interior.

5. As part of the consideration for this Deed, the Grantee covenants and agrees for itself, its successors and assigns, that (1) the program for or in connection with which this Deed is made will be conducted in compliance with, and the Grantee, its successors and assigns, will comply with all requirements imposed by or pursuant to the regulations of the Department of the Interior in effect on the date of this Deed (43 C.F.R. Part 17) issued under the provisions of Title VI of the Civil Rights Act of 1964; (2) this covenant shall be subject in all respects to the provisions of said regulations; (3) the Grantee, its successors and assigns, will promptly take and

continue to take such action as may be necessary to effectuate this covenant;

(4) the United States shall have the right to seek judicial enforcement of this covenant, and (5) the Grantee, its successors and assigns, will (a) obtain from each other person (any legal entity) who, through contractual or other arrangements with the Grantee, its successors or assigns, is authorized to provide services or benefits under said program, a written agreement pursuant to which such other person shall, with respect to the services or benefits which he is authorized to provide, undertake for himself the same obligations as those imposed upon the Grantee, its successors and assigns, by this covenant, and (b) furnish a copy of such agreement to the Secretary of the Interior, or his successor; and that this covenant shall run with the land hereby conveyed, and shall in any event, without regard to technical classification or designation, legal or otherwise, be binding to the fullest extent permitted by law and equity for the benefit of, and in favor of the Grantor and enforceable by the Grantor against the Grantee, its successors and assigns.

6. The Grantor and the Grantee agree that the Grantee is prohibited from developing the property herein conveyed in any manner which is incompatible with Executive Order 11988, relating to Floodplain Management, and Executive Order 11990, relating to Protection of Wetlands. The Grantor and the Grantee agree that this prohibition is irrevocable, and the Grantee agrees to include in any subsequent transfer an identical irrevocable prohibition.

7. The Grantee agrees to comply with the requirements of Public Law 90-480 (82 Stat. 718), the Architectural Barriers Act of 1968, as amended by Public Law 91-205 of 1970 (84 Stat. 49), to assure that development of facilities on conveyed properties are accessible to the physically handicapped; and, further assure in accordance with Public Law 93-112, the Rehabilitation Act of 1973 (87 Stat. 394), that no otherwise qualified handicapped individual shall solely by reasons of his handicap be excluded from the participation in, be denied benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

8. The Grantee shall comply with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470f), and the regulations promulgated thereunder; 36 C.F.R. 800, and Presidential directives issued pursuant to Section 106-Executive Order 11593, May 13, 1971, "Protection and Enhancement of the Cultural Environment" (36 FR 8921, 16 U.S.C. 470), and the President's Memorandum on Environmental Quality and Water Resources Management, July 12, 1978.

9. The Grantee agrees that in accordance with the provisions of Section 204 of Public Law 93-166, that portion of the subject property which has heretofore been used as a bombardment area by the United States Navy is hereby accepted by Grantee in its present condition and further agrees that the United States shall not in any manner be responsible for decontamination of such area, nor for the costs thereof, but the same is and shall be solely the responsibility of the Grantee. The Grantee hereby agrees to indemnify and save the Grantor harmless from any and all claims, demands, actions, liabilities, judgments, costs and attorney's fees arising out of, claimed on account of or in any manner predicated upon loss or damage to property or injuries to or the death of any and all persons whatsoever, arising in any way from any person's use of or presence on the subject property. Further, in accordance with said Act, the Grantee understands and agrees that Tracts (1b), (1c) and (1k) shall hereafter be utilized only for public park or public recreational purposes.

10. In the event there is a breach of any of the conditions and covenants herein contained by the Grantee, its successors and assigns, whether caused by the legal or other inability of the Grantee, its successors and assigns, to perform said conditions and covenants, or otherwise, all right, title and interest in and to the said premises shall revert to and become the property of the Grantor at its option, which in addition to all other remedies for such breach shall have the right of entry upon said premises, and the Grantee, its successors and assigns, shall forfeit all right, title and interest in said premises and in any and all of the tenements, hereditaments and appurtenances thereunto belonging; provided, however, that the failure of the Secretary of the Department of the Interior to require in any one or more instances complete performance of any of the conditions or covenants shall not be construed as a waiver or relinquishment of any future performance, but

*Not an owner (1b) only not covered by Section 106 of the Act. The easement holder is not bound by the provisions of Public Law 93-166. The easement holder is not bound by the provisions of Public Law 93-166. The easement holder is not bound by the provisions of Public Law 93-166.*

*JF*

the obligation of the Grantee, its successors and assigns, with respect to such future performance shall continue in full force and effect.

IN WITNESS WHEREOF, the Grantor has caused these presents to be executed in its name and on its behalf this the 11<sup>th</sup> day of AUGUST, 1982.

UNITED STATES OF AMERICA  
Department of the Interior  
Secretary of the Interior

By [Signature]

WITNESSES:

[Signature: Kittle B. Smith]  
[Signature: Carrie L. Gursako]

STATE OF DISTRICT OF COLUMBIA )  
COUNTY OF \_\_\_\_\_ ) ss

On this 11<sup>th</sup> day of AUGUST, 1982, before me, the subscriber, personally appeared \_\_\_\_\_ Secretary of the Interior, United States Department of the Interior, and known to me to be the same person described in and who executed the foregoing instrument aforesaid, as the act and deed of the United States of America, and he acknowledged that he executed the foregoing instrument for and on behalf of the United States of America, for the purposes and uses therein described.

[Signature]  
NOTARY PUBLIC

My commission expires:  
[Signature]

Serial A 33623

DISTRICT OF COLUMBIA

ALL WHOM THESE PRESENTS SHALL COME, GREETING:

CERTIFY THAT JEAN C. ECKERT whose name is subscribed to the accompanying instrument, was at the time of signing the same a Notary Public and for the District of Columbia, and duly commissioned and authorized by the laws of said District of Columbia to take the acknowledgment and proof of deeds or conveyance of lands, tenements, or hereditaments, and other instruments in writing to be recorded in said District, and to administer oaths; and that I am well acquainted with the handwriting of said Notary Public and verily believe that the signature and impression of seal thereon are genuine, after comparison with signature and impression of seal on file in this office.

IN WITNESS WHEREOF, the Executive Secretary to Commissioner of the District of Columbia, has hereunto caused the Seal of the District of Columbia to be affixed at the City of Washington, D.C., this 18th day of NOVEMBER, 1982

(C. SEAL)

[Signature]  
Chief, Notary Public Section

The foregoing conveyance is hereby accepted and the undersigned agrees by this acceptance, to assume and be bound by all the obligations, conditions, covenants and agreements therein contained.

COMMONWEALTH OF PUERTO RICO

By Carlos Romero Barceló  
Governor

COMMONWEALTH OF PUERTO RICO )  
  ) ss  
  )

On this 20th day of December, 1982, before me, the undersigned Officer, personally appeared Carlos Romero Barceló, known to me to be the same person whose name is subscribed to the foregoing acceptance, who being by me duly sworn, did depose and say that he is the Governor of the Commonwealth of Puerto Rico, that he is duly designated, empowered and authorized to execute the foregoing acceptance and sign his name thereto; and that he signed his name thereto and acknowledges that he executed the foregoing instrument for and on behalf of the Commonwealth of Puerto Rico for the purposes and uses therein described.

Affidavit No. 252.

ELIAN  
NOTARY PUBLIC

My commission expires:

For life.



QUITCLAIM DEED

9/26/80

*Culebra*

The UNITED STATES OF AMERICA, acting by and through the Secretary of the Interior, acting by and through the Southeast Regional Director, Heritage, Conservation and Recreation Service, under and pursuant to the power and authority contained in the provisions of the Federal Property and Administrative Services Act of 1949 (63 Stat. 377), as amended, and particularly as amended by Public Law 485, 91st Congress, and regulations and orders promulgated thereunder (hereinafter designated "Grantor"), for and in consideration of the perpetual use of the hereinafter described premises for public park and public recreation area purposes, by the Commonwealth of Puerto Rico (hereinafter designated "Grantee"), does hereby release and quitclaim to Grantee, and to its successors and assigns, subject to the reservations, exceptions, restrictions, conditions and covenants hereinafter expressed and set forth, all Grantor's right, title and interest in and to the following described property, consisting of approximately 155.9436 acres, located on Culebra Island, Puerto Rico:

*NEAR AIRFIELD*

PARCEL 2

BEGINNING at the corner common to Lots 52, 53 and 57, according to the official map of Culebra Island and its division in lots, dated October 8, 1887; thence with the south boundary of Lot 52, S. 81° 45' 30" E., 910.32 feet; thence S. 37° 49' 55" E., 338.88 feet; thence S. 37° 50' 03" E., 290.41 feet; thence S. 34° 15' 37" E., 267.02 feet; thence S. 30° 18' 00" E., 103.80 feet; thence S. 23° 37' 30" E., 194.96 feet; thence S. 20° 07' 23" E., 356.39 feet; thence S. 34° 53' 16" E., 296.97 feet; thence S. 34° 53' 04" E., 116.83 feet; thence S. 46° 34' 56" E., 98.85 feet; thence S. 57° 50' 54" E., 780.31 feet; thence S. 44° 40' 34" E., 473.92 feet; thence S. 40° 29' 52" E., 243.66 feet; thence S. 44° 06' 12" E., 571.10 feet; thence S. 23° 32' 28" W., approximately 80.0 feet to the corner common to Lots 49, 86, 85, 61, and 60; thence with the north boundary of Lot 60, S. 89° 15' 15" W., approximately 150 feet to the southeast corner of a tract of land consisting of two contiguous parcels containing approximately 4.08 Acres and 28.25 Acres, respectively, as shown on map of Property Line Survey of the Commonwealth of Puerto Rico, Housing Department, Social Programs Administration, prepared by Ernesto Saenz, License No. 1752 on May 27, 1976. Thence with the northeast boundary of said tract N. 36° 48' 38" W. 613.97 feet; thence N. 36° 48' 22" W. 147.64 feet; thence N. 51° 17' 11" W. 1539.56 feet; thence S. 59° 36' 08" W. 492.11 feet to the northeast boundary of Lot 59; thence with the northeast boundary of Lots 59 and 58, N. 35° 19' 38" W., 1,163.31 feet; thence continuing with said northeast boundary of Lot 58, N. 4° 50' 21" W., 656.16 feet; thence N. 15° 16'

14" W., 232.82 feet; thence N. 58° 14' 32" W., 141.07 feet; thence N. 33° 21' 37" W., 390.25 feet to the PLACE OF BEGINNING.

### PARCEL 3

BEGINNING at the corner common to Lots 52, 47, 48 and 53, according to the official map of Culebra Island and its division in lots, dated October 8, 1887; thence with the south boundary of Lot 47, S. 65° 06' 30" E., 2,365.48 feet to the corner common to Lots 47, 43, 42 and 48; thence with the south boundary of Lot 43, N. 89° 00' E., 1,640.02 feet to the corner common to Lots 43, 40, 41 and 42; thence with the west boundary of Lot 41, S. 1° 00' E., 1,640.02 feet to the corner common to Lots 43, 41 and 49; thence with the south boundary of Lot 41, N. 89° 00' E., 1,400.92 feet and S. 56° 10' E., 190.29 feet to the corner common to Lots 41, 86 and 49; thence with the east and south boundaries of Lot 49, S. 33° 01' W., 314.96 feet; S. 38° 08' E., 787.40 feet; S. 73° 15' W., 623.36 feet; N. 64° 49' W., 403.54 feet; N. 37° 32' W., 403.54 feet; N. 81° 33' W., 636.48 feet; S. 85° 02' 16" W., approximately 60.0 feet to the new airport boundary; thence with said airport boundary, N. 30° 55' 06" E., 97.27 feet; N. 59° 04' 57" W., 1,785.00 feet; N. 46° 46' 32" W., 3,163.81 feet to the PLACE OF BEGINNING, containing 116.45 acres, more or less.

There are excepted from this conveyance a water catchment basin and storage tank located on 0.46 of an acre of land including a 20' strip of land surrounding the catchment basin and storage tank, as shown on Exhibit B of a deed between the Grantor (acting through the Department of Health, Education, and Welfare) and the Grantee (acting through the Puerto Rico Aqueduct and Sewer Authority) dated May 2, 1979. There are also excepted from this conveyance the road easement and three water pipeline easements conveyed by said deed of May 2, 1979, as shown on Exhibit B and C thereof.

There is reserved to the Grantor and its assigns a perpetual and assignable access road and utilities easement for construction, maintenance, repair, replacement, etc. of an access road and utility lines running on, in, over and through a 25' wide strip of land between Road No. 999 and Parcel 5 (4.08 + acre parcel as identified on the Land Use Plan for Tract 7), the exact location of which is to be decided upon by Grantee.

There is reserved to the Grantor, its successors and assigns, for the use and benefit of the public a right of flight for the passage of aircraft in the airspace above the surface of the land herein conveyed together with the right to cause in said airspace such noise as may be inherent in the operation of aircraft, and for use of said aircraft for landing on, taking off from or operating on the Culebra Airport.

There are excepted from this conveyance and reserved to the Grantor, and its assigns, all oil, gas, and other minerals in, under and upon the lands herein conveyed, together with the rights to enter upon the land for the purpose of mining and removing the same.

This conveyance is made subject to any and all existing rights-of-way, easements and covenants and agreements affecting the above described premises, whether or not the same now appear of record.

To Have and to Hold the hereinabove described property, subject to the reservations, exceptions, restrictions, conditions and covenants herein expressed and set forth unto the Grantee, its successors and assigns, forever.

Pursuant to authority contained in the Federal Property and Administrative Services Act of 1949, as amended, and applicable rules, regulations and orders promulgated thereunder, the General Services Administration determined the property to be surplus to the needs of the United States of America and assigned the property to the Department of the Interior for further conveyance to the Commonwealth of Puerto Rico.

It is agreed and understood by and between the Grantor and Grantee, and the Grantee by its acceptance of this deed, does acknowledge its understanding of the agreement, and does covenant and agree for itself, and its successors and assigns, forever, as follows:

1. This property shall be used and maintained for the public purposes for which it was conveyed in perpetuity as set forth in the program of utilization and plan contained in the application, submitted by the Recreational Development Company on September 13, 1977, which program and plan may be amended from time to time at the request of either the Grantor or Grantee, with the written concurrence of the other party, and such amendments shall be added to and become a part of the original application.

2. The Grantee shall, within 6 months of the date of the deed of conveyance, erect and maintain a permanent sign or marker near the point of principal access to the conveyed area indicating that the property is a park or recreation area and has been acquired from the Federal Government for use by the general public.

3. The property shall not be sold, leased, assigned, or otherwise disposed of except to another eligible governmental agency that the Secretary of the Interior agrees in writing can assure the continued use and maintenance of the property for public park or public recreational purposes subject to the same terms and conditions in the original instrument of conveyance. However, nothing in this provision shall preclude the Grantee from providing related recreational facilities and services compatible with the approved application, through concession agreements entered into with third parties, provided prior concurrence to such agreements is obtained in writing from the Secretary of the Interior.

4. From the date of this conveyance, the Grantee, its successors and assigns, shall submit biennial reports to the Secretary of the Interior, setting forth the use made of the property during the preceding two-year period, and other pertinent data establishing its continuous use for the purposes set forth above, for ten consecutive reports and as further determined by the Secretary of the Interior.

5. If at any time the United States of America shall determine that the premises herein conveyed, or any part thereof, are needed for the national defense, all right, title and interest in and to said premises, or part thereof determined to be necessary to such national defense, shall revert to and become the property of the United States of America.

6. As part of the consideration for this Deed, the Grantee covenants and agrees for itself, its successors and assigns, that (1) the program for or in connection with which this Deed is made will be conducted in compliance with, and the Grantee, its successors and assigns, will comply with all requirements imposed by or pursuant to the regulations of the Department of the Interior in effect on the date of this Deed (43 C.F.R. Part 17) issued under the provisions of Title VI of the Civil Rights Act of 1964; (2) this covenant shall be subject in all respects to the provisions of said regulations; (3) the Grantee, its successors and assigns, will promptly take and continue

to take such action as may be necessary to effectuate this covenant; (4) the United States shall have the right to seek judicial enforcement of this covenant, and (5) the Grantee, its successors and assigns, will (a) obtain from each other person (any legal entity) who, through contractual or other arrangements with the Grantee, its successors or assigns, is authorized to provide services or benefits under said program, a written agreement pursuant to which such other person shall, with respect to the services or benefits which he is authorized to provide, undertake for himself the same obligations as those imposed upon the Grantee, its successors and assigns, by this covenant, and (b) furnish a copy of such agreement to the Secretary of the Interior, or his successor; and that this covenant shall run with the land hereby conveyed, and shall in any event, without regard to technical classification or designation, legal or otherwise, be binding to the fullest extent permitted by law and equity for the benefit of, and in favor of the Grantor and enforceable by the Grantor against the Grantee, its successors and assigns.

7. Grantee expressly agrees for itself, its successors and assigns, to restrict the height of structures, objects of natural growth and other obstructions on the land being conveyed to such a height so as to comply with FAA Regulations, Part 77.

8. Grantee expressly agrees for itself, its successors and assigns, to prevent any use of the land herein conveyed which would interfere with or adversely affect the operation or maintenance of the Culebra Airport, or otherwise constitute an airport hazard.

9. The Grantor and the Grantee agree that the Grantee is prohibited from developing the property herein conveyed in any manner which is incompatible with Executive Order 11988, relating to Floodplain Management, and Executive Order 11990, relating to Protection of Wetlands. The Grantor and the Grantee agree that this prohibition is irrevocable, and the Grantee agrees to include in any subsequent transfer an identical irrevocable prohibition.

10. The Grantee agrees to comply with the requirements of Public Law 90-480 (82 Stat. 718), the Architectural Barriers Act of 1968, as amended by Public Law 91-205 of 1970 (84 Stat. 49), to assure that development of facilities on conveyed surplus properties for public park and recreation purposes are accessible to the physically handicapped; and, further assure in accordance with Public Law 93-112, the Rehabilitation Act of 1973 (87 Stat. 394), that no otherwise qualified handicapped individual shall solely by reasons of his handicap be excluded from the participation in, be denied benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

11. Grantee shall be on the lookout for archaeological artifacts during its construction activities and shall take appropriate action should any artifacts be discovered.

12. In the event there is a breach of any of the conditions and covenants herein contained by the Grantee, its successors and assigns, whether caused by the legal or other inability of the Grantee, its successors and assigns, to perform said conditions and covenants, or otherwise, all right, title and interest in and to the said premises shall revert to and become the property of the Grantor at its option, which in addition to all other remedies for such breach shall have the right of entry upon said premises, and the Grantee, its successors and assigns, shall forfeit all right, title and interest in said premises and in any and all of the tenements, hereditaments and appurtenances thereunto belonging; provided, however, that the failure of the Secretary of the Department of the Interior to require in any one or more instances complete performance of any of the conditions or covenants shall not be construed as a waiver or relinquishment of such future performance, but the obligation of the Grantee, its successors and assigns, with respect to such future performance shall continue in full force and effect.

IN WITNESS WHEREOF, the Grantor has caused these presents to be executed in its name and on its behalf this the 25<sup>th</sup> day of September, 1980.

UNITED STATES OF AMERICA  
acting by and through the  
Secretary of the Interior

Through:

Robert M. Baker  
Southeast Regional Director  
Heritage, Conservation and Recreation Service

By Paul E. Hartung

WITNESSES:

Miguelina P. Hartung  
J. E. Hartung

COMMONWEALTH OF PUERTO RICO }  
MUNICIPALITY OF San Juan } SS

Att. 365

On this 25<sup>th</sup> day of September, 1980, before me, the subscriber, personally appeared Paul B. Hartwig, Heritage, Conservation and Recreation Service, of the United States Department of the Interior, a governmental agency of the United States of America, and known to me to be the same person described in and who executed the foregoing instrument aforesaid, as the act and deed of the United States of America, for and on behalf of the Secretary of the Interior, duly designated, empowered and authorized so to do by said Secretary, and he acknowledged that he executed the foregoing instrument for and on behalf of the United States of America, for the purposes and uses therein described.



[Signature]  
NOTARY PUBLIC

The foregoing conveyance is hereby accepted and the undersigned agrees, by this acceptance, to assume and be bound by all the obligations, conditions, covenants and agreements therein contained.

WITNESS:

[Signature]

COMMONWEALTH OF PUERTO RICO

By [Signature]  
Governor

COMMONWEALTH OF PUERTO RICO }  
MUNICIPALITY OF San Juan } SS

Att. 367

On this 26<sup>th</sup> day of September, 1980, before me, the undersigned Officer, personally appeared Carlos Romero-Barcelo, to me known and known to me to be the same person whose name is subscribed to the foregoing acceptance, who being by me duly sworn, did depose and say that he is the Governor of the Commonwealth of Puerto Rico, to execute the foregoing acceptance and sign his name thereto; and that he signed his name thereto and acknowledges that he executed the foregoing instrument for and on behalf of the Commonwealth of Puerto Rico for the purposes and uses therein described.



[Signature]  
NOTARY PUBLIC

*Culebra*

*Acuerdo  
Culebra*

*100.6 AC*

QUITCLAIM DEED

1. THIS INDENTURE, made the *7<sup>th</sup>* day of *February 1980* between the UNITED STATES OF AMERICA, also referred to as the Government, acting by and through the Administrator of General Services, under and pursuant to the powers and authority of Article 4, Section 3, Clause 2 of the Constitution of the United States, and the provisions of the Federal Property and Administrative Services Act of 1949, approved June 30, 1949 (63 Stat. 377), as amended, and the Surplus Property Act of 1944 (58 Stat. 765) as amended, and regulations and orders promulgated thereunder, party of the first part, as Grantor, and the PUERTO RICO PORTS AUTHORITY, a corporate instrumentality of the Commonwealth of Puerto Rico, created by Act No. 125 of the Legislature of Puerto Rico approved May 7, 1942, party of the second part as Grantee.

W I T N E S S E T H:

2. That the said Grantor, for and in consideration of the assumption by the Grantee of all the obligations and its taking subject to certain reservations, restrictions and conditions and its covenant to abide by, and its agreement to, certain other reservations, restrictions and conditions, all as set out hereinafter, has remise, released and forever quitclaimed and by these presents does remise, release and forever quitclaim to the Grantee, its successors and assigns, without warranty, express or implied, under and subject to the reservations, restrictions, conditions and exceptions, all as hereinafter expressed and set out, all right, title, interest, claim and demand which the Grantor has in and to that certain property situate, lying and being in Ward Flamenco, of the Municipality of Culebra, Commonwealth of Puerto Rico, formerly known as portion of the U.S. Navy Auxiliary Landing Facility, Culebra, and described in detail in Attachment "A" hereof, for the use stated therein.

3. WHEREAS, all the property hereby conveyed has heretofore been declared surplus to the needs of the UNITED STATES OF AMERICA, is presently under the jurisdiction of the General Services Administration, is available for disposal and its disposal has been heretofore authorized by the Administrator of General Services, acting pursuant to the above referred to laws, regulations and orders.

4. TO HAVE AND TO HOLD the same, together with all and singular the appurtenances thereunto belonging or in anywise appertaining, and all the estate, right, title, interest or claim whatsoever of the Grantor, either in law or in equity and subject to the reservations, restrictions, and conditions set forth in this instrument, to the only proper use, benefit and behalf of the Grantee, its successors and assigns forever.

5. NOW THEREFORE, by the acceptance of this Deed or any rights hereunder, the Grantee, for itself, its successors and assigns, agrees that the transfer of all the property transferred by this instrument, is accepted subject to the following restrictions set forth in subparagraphs (a) and (b) of this paragraph, which shall run with the land:

(a) That, except as provided in subparagraph (A) of numbered paragraph 6, the property transferred by this instrument shall be used for public airport purposes for the use and benefit of the public, on reasonable terms and without unjust discrimination and without grant or exercise of any exclusive right for use of the airport within the meaning of the term "exclusive right" as used in subparagraphs (C) of the numbered paragraph 6. As used in this instrument, the term "airport" shall be deemed to include all land, buildings, structures, improvements and equipment used for public airport purposes.

(b) That, except as provided in subparagraph (A) of the numbered paragraph 6, the entire landing area, as defined in Section 101 of the

Federal Aviation Act of 1958, as amended, and Federal Aviation Regulations pertaining thereto, and all structures, improvements, facilities and equipment in which this instrument transfers any interest shall be maintained for the use and benefit of the public at all times in safe and serviceable condition, to assure its efficient operation and use, provided, however, that such maintenance shall be required as to structures, improvements, facilities and equipment only during the useful life thereof, as determined by the Administrator of the Federal Aviation Administration (FAA) or his successor in function. In the event materials are required to rehabilitate or repair certain of the aforementioned structures, improvements, facilities or equipments, they may be procured by demolition of other structures, improvements, facilities or equipment transferred hereby and located on the above land which have outlived their use as airport property in the opinion of the Administrator of the FAA or his successor in function.

6. FURTHER, by the acceptance of this Deed or any rights hereunder, the Grantee for itself, its successors and assigns, also assumes the obligation of, covenants to abide by and agree to, and this transfer is made subject to, the following reservations and restrictions set forth in subparagraphs (A) to (Q), inclusive, of this paragraph, which shall run with the land: Provided, that the property transferred hereby may be successively transferred only with the proviso that any such subsequent transferee assumes all the obligations imposed upon the Grantee by the provisions of this instrument.

A. That no property transferred by this instrument shall be used, leased, sold, salvaged, or disposed of by the Grantee for other than the airport purposes without the written consent of the Administrator of the FAA. The term "property" as used herein is deemed to include revenues or proceeds derived therefrom.

66 degrees 26'; run thence, along the common boundary of Lots 47 and 48 of the Culebra Sub-Division, South 03 degrees 59 minutes 30 seconds West 3,280.37 feet to Point No. 3, a point on the north boundary of the former U.S. Navy Auxiliary Landing Facility property with Lambert Coordinates Y=177,286.90 feet; X=891,945.93 feet, as this point is described in Deed of Conveyance No. 4 dated March 16, 1939; thence, along the South boundary of Lot No. 47 of the Culebra Sub-Division, N 65 degrees 06'30" W, a distance of 2,365.48 feet to Point No. 2 of said boundary with Lambert Coordinates Y=178,284.14 feet; X=889,800.95 feet; thence, N 81 degrees 45'50" W, a distance of 703.49 feet to Point INT-1A, which point is the true point of beginning of this survey, said point being more particularly located on the right edge of the public road leading to Punta Flamenco which road meanders along the east boundary of this Parcel. From said TRUE POINT OF BEGINNING proceed thence S 37 degrees 49'55" E, along the right edge of said road, a distance of 338.88 feet to Point C15A with Lambert Coordinates Y=178,118.48'; X=889,312.74' thence, continuing along the right edge of said road, S 37 degrees 50'03" E, a distance of 290.41 feet to Point 44A with Lambert Coordinates Y=177,889.12 feet; X=889,490.87 feet; thence, along said road S 34 degrees 15'37" E, 267.02 feet to Point C14A with Lambert Coordinates Y=177,668.43 feet; X=889,641.19 feet, thence, along said road, S 30 degrees 18'00" E, 103.60 feet to Point 42A, thence, S 23 degrees 37'30" E, a distance of 194.96 feet to Point C13A; thence, S 20 degrees 07'23" E, 356.39 feet to Point C12A; thence, S 34 degrees 53'16" E, 296.97 feet to Point C11B with Lambert Coordinates Y=176,821.96 feet; X=890,064.16 feet which point is the southeast corner of the Parcel; thence, N 64 degrees 47'37" W, 1,581.34 feet to Point 22A, the southwest corner of the Parcel on the west boundary of the former U.S. Navy Auxiliary Landing Facility property, with Lambert Coordinates Y=177,495.42 feet; X=888,633.40 feet; thence, along said boundary, N 04 degrees 50' 21" W, 397.82 feet to Point 23 with Lambert Coordinates Y=177,891.82 feet; X=888,599.84 feet; thence, along said boundary N 15 degrees 16'14" W, 232.82 feet to Point 24; thence, along said boundary N 58 degrees 14'32" W, 141.07 feet to Point 25, thence N 33 degrees 21'37" W, 390.25 feet to Point 1, the northwest corner of the Parcel and of the former U.S. Navy Auxiliary Landing Facility property with Lambert Coordinates Y=178,516.62 feet; X=888,203.97 feet; thence, along the north boundary of said property, S 81 degrees 45'30" E, 910.32 feet to Point INT-A1, the point of beginning already described."

Parcel A-1, above described form part and will be segregated from that certain property known as the Former U.S. Navy Auxiliary Landing Facility - Culebra, acquired by the United States of America from the Commonwealth of Puerto Rico by Deed of Transfer No. 4 executed March 16, 1939 before Notary Public Manuel Iriarte Miro, recorded in the Registry of Property, Humacao, section, at Page 236, Book 5 of Culebra, Property No. 256, Fourth Inscription.

will not exercise or grant any right or privilege which would operate to prevent any person, firm, or corporation operating aircraft on the airport from performing any services on its own aircraft with its own employees (including, but not limited to maintenance and repair) that it may choose to perform. (5) That in the event the Grantee itself exercises any of the rights and privileges referred to in subsection (3) above the services involved will be provided on the same conditions as would apply to the furnishing of such services by contractors or concessionaires of the Grantee under the provisions of such subsection (3) of this paragraph.

C. The Grantee will not grant or permit any exclusive right for the use of the airport at which the property described herein is located which is forbidden by Section 308 of the Federal Aviation Act of 1958, as amended, by any person or persons to the exclusion of others in the same class and will otherwise comply with all applicable laws. In furtherance of this covenant (but without limiting its general applicability and effect), the Grantee specifically agrees that, unless authorized by the Administrator, it will not, either directly or indirectly grant or permit any person, firm or corporation the exclusive right to conduct any aeronautical activity on the airport including but not limited to, charter flights, pilot training, aircraft rental and sightseeing, aerial photography, crop dusting, aerial advertising and surveying, air carrier operations, aircraft sales, and services, sale of aviation petroleum products whether or not conducted in conjunction with other aeronautical activity, repair and maintenance of aircraft, sale of aircraft parts, and any other activities which because of their direct relationship to the operation of aircraft can be regarded as an aeronautical activity. The Grantee further agrees that it will terminate as soon as possible and no later than the earliest renewal, cancellation, or expiration date

applicable thereto, any exclusive right existing at any airport owned or controlled by the Grantee or hereafter acquired and that, thereafter, no such right shall be granted. However, nothing contained herein shall be construed to prohibit the granting or exercise of or exclusive right for the furnishing of nonaviation products and supplies or any services of a nonaeronautical nature or to obligate the Grantee to furnish any particular nonaeronautical service at the airport.

D. The Grantee shall, insofar as it is within its powers and to the extent reasonable, adequately clear and protect the aerial approach to the airport. The Grantee will, either by the acquisition and retention of easements or other interests in or rights for the use of land airspace or by the adoption and enforcement of zoning regulations, prevent the construction, erection, alteration, or growth of any structure, trees, or other object in the approach areas of the runways of the Airport which would constitute an obstruction to air navigation according to the criteria or standards prescribed in Part 77 of the Federal Aviation Regulations, as applicable, according to the currently approved airport layout plan. In addition, the Grantee will not erect or permit the erection of any permanent structure or facility which would interfere materially with the use, operation, or future development of the Airport, in any portion of a runway approach area in which the Grantee has acquired, or may hereafter acquire, property interest permitting it to so control the use made of the surface of the land. Insofar as is within its power and to the extent reasonable the Grantee will take action to restrict the use of the land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations including landing and take-off of aircraft.

E. The Grantee will operate and maintain in a safe and serviceable condition, as deemed reasonably necessary by the Administrator of the FAA, the airport and all facilities thereon and connected therewith

which are necessary to service the aeronautical users of the airport other than facilities owned or controlled by the United States and will not permit any activity thereon which would interfere with its use for airport purposes: Provided, that nothing contained herein shall be construed to require that the airport be operated for aeronautical uses during temporary periods when snow, flood, or other climatic conditions interfere with such operation and maintenance, repair, restoration or replacement of any structure or facility which is substantially damaged or destroyed due to an act of God or other condition or circumstance beyond the control of the Grantee.

F. That the Grantee will make available all facilities of the airport at which the property described herein is located or developed with Federal aid and all those usable for the landing and taking off of aircraft to the United States at all times, without charge, for use by aircraft of any agency of the United States in common with other aircraft, except that if the use by aircraft of any agency of the United States in common with other aircraft, is substantial, a reasonable share, proportional to such use, of the cost of operating and maintaining facilities so used, may be charged; and unless otherwise determined by the FAA, or otherwise agreed to by the Grantee and the using Federal agency, substantial use of an airport by United States aircraft will be considered to exist when operations of such aircraft are excess of those which, in the opinion of the FAA, would unduly interfere with use of the landing area by other authorized aircraft or during any calendar month that (1) either five (5) or more aircraft of any agency of the United States are regularly based at the airport or on land adjacent thereto, or (2) the total number of movements (counting each landing as a movement and each take-off as a movement) of aircraft of any agency of the United States is

300 or more, or (3) the gross accumulative weight of aircraft of an agency of the United States using the airport (the total movements of such Federal aircraft multiplied by gross certified weights thereof) is in excess of five million pounds.

G. That during any national emergency declared by the President of the United States of America or the Congress thereof, including any existing national emergency, the Government shall have the right to make exclusive or nonexclusive use and have exclusive or nonexclusive control and possession without charge, of the airport, or of such portion thereof as it may desire, provided, however, that the Government shall be responsible for the entire cost of maintaining such part of the airport as it may use exclusively; or over which it may have exclusive possession or control, during the period of such use, possession, or control, and shall be obligated to contribute a reasonable share, commensurate with the use made by it, of the cost of maintenance of such property as it may use nonexclusively or over which it may have nonexclusive control and possession: Provided, further, that the Government shall pay a fair rental for its use, control, or possession, exclusively or non-exclusively, of any improvements to the airport made without United States aid and never owned by the United States.

H. The Grantee does hereby release the Government, and will take whatever action may be required by the Administrator of the FAA to assure the complete release of the Government from any and all liability the Government may be under for restoration or other damage under any lease or other agreement covering the use of the Government of the airport, or part thereof, owned, controlled or operated by the Grantee, upon which, adjacent to which, or in connection with which, any property transferred by this instrument was located or used.

I. That whenever so requested by the FAA, Grantee will furnish without cost to the Federal Government, for construction, operation and maintenance of facilities for air traffic control activities, or weather reporting activities, or communication activities related to air traffic control, such areas of the property described herein or of rights in buildings on the airport at which the property described herein is located, as the FAA may consider necessary or desirable for construction at Federal expense of space or facilities for such purposes, and the Grantee will make available such areas or any portion thereof for the purposes provided herein within 4 months after receipt of written request from the FAA, if such are or will be available.

J. The Grantee will: (1) furnish the FAA with annual or special airport financial and operational reports as may be reasonably requested using either forms furnished by the FAA or in such manner as it elects so long as the essential data are furnished, and (2) upon reasonable request of the FAA; make available for inspection by any duly authorized representative of the FAA, the airport, at which the property described herein is located and all airport records and documents affecting the Airport, including deeds, leases, operation and use agreements, regulations, and other instruments and will furnish to the FAA a true copy of any such document which may be reasonably requested.

K. And, that the Grantee will not enter into any transaction which would operate to deprive it of any of the rights and powers necessary to perform or comply with any or all of the covenants and conditions set forth herein unless by such transaction the obligation to perform or comply with all such covenants and conditions is assumed by another public agency found by the FAA to be eligible as a public agency as defined in the Airport and Airway Development Act of 1970 as amended (PL 94-353) to assume such obligation and have the power, authority, and

financial resources to carry out all such obligations and, if an arrangement is made for management or operation of the Airport by any agency or person other than the party of the second part, it will reserve sufficient rights and authority to insure that such airport will be operated and maintained in accordance with these covenants and conditions, any applicable Federal statute, and the Federal Aviation Regulations.

L. And, that the Grantee will keep up to date at all times an airport layout map of the Airport at which the property described herein is located showing: (a) the boundaries of the Airport and all proposed additions thereto, together with the boundaries of all offsite areas owned or controlled by the Grantee for airport purposes and proposed additions thereto; (b) the location and nature of all existing and proposed airport facilities and structures (such as runways, taxiways, aprons, terminal buildings, hangars, and roads), including all proposed extension and reductions of existing airport facilities; (c) the location of all existing and proposed nonaviation areas and of all existing improvements thereon and uses made thereof and such airport layout map and each amendment, revision, or modification thereof, shall be subject to the approval of the FAA, which approval shall be evidenced by the signature of a duly authorized representative of the FAA on the face of the airport layout map, and the Grantee will not make or permit the making of any changes or alterations in the Airport or any of its facilities other than in conformity with the airport layout map as so approved by the FAA, if such changes or alterations might adversely affect the safety, utility, or efficiency of the Airport.

M. And, that if at any time it is determined by the FAA that there is any outstanding right or claim of right in or to the Airport property, described herein, the existence of which creates an undue risk of interference with the operation of the Airport or the performance of compliance

with covenants and conditions set forth herein, the Grantee will acquire, extinguish, or modify such right or claim of right in a manner acceptable to the FAA.

N. That in the event that any of the aforesaid terms, conditions, reservations, or restrictions are not met, observed, or complied with by the Grantee or any subsequent transferee, whether caused by the legal inability of said Grantee or subsequent transferee to perform any of the obligations herein set out, or otherwise, the title, right of possession and all other rights transferred by this instrument to the Grantee, or any portion thereof, shall at the option of the Grantor revert to the Grantor in its then existing condition sixty (60) days following the date upon which demand to this effect is made in writing by the Administrator of the FAA or his successor in function, unless within (60) days such default or violation shall have been cured and all such terms, conditions, reservations and restrictions shall have been met, observed, or complied with, in which event said reversion shall not occur and title, right of possession, all other rights transferred hereby, except such, if any, as shall have previously reverted, shall remain vested in the Grantee, its transferees, successors and assigns.

O. That if the construction as covenants of any of the foregoing reservations and restrictions recited herein as covenants or the application of the same as covenants in any particular instance is held invalid, the particular reservation or restrictions in question shall be construed instead merely as conditions upon the breach of which the Government may exercise its option to cause the title, interest, right of possession, and all other rights transferred to the Grantee, or any portion thereof, to revert to it, and the application of such reservations or restrictions as covenants in any other instance and the

construction of the remainder of such reservations and restrictions as covenants shall not be affected thereby.

P. The Grantee, for itself and its successors and assigns, agrees that no subsurface rights to minerals or other interests included in the property transferred hereby for airport purposes shall be exploited in such a way as will interfere with the efficient operation of the airport.

Q. Notwithstanding anything hereinbefore contained, and as part of the consideration for this deed, the Grantee, by the acceptance of this deed the party of the second part, sometimes herein called the Grantee, covenants and agrees for itself, its successors and assigns, that (1) the purposes for which this deed is made will be conducted in compliance with, and the Grantee, its successors and assigns will comply with all requirements imposed by or pursuant to the regulations of the Department of Transportation (49, CFR-21) issued under the provisions of Title VI of the Civil Rights Act of 1964; (2) this covenant shall be subject in all respects to the provisions of said regulations; (3) the Grantee, its successors and assigns will promptly take and continue to take such action as may be necessary to effectuate this covenant; (4) the United States shall have the right to seek judicial enforcement of this covenant, and (5) the Grantee, its successors and assigns will (a) obtain from each other person (any legal entity) who, through contractual or other arrangements with the Grantee, its successors or assigns, is authorized to provide services to effectuate the purposes hereof, a written agreement pursuant to which such other person shall, with respect to the services which he is authorized to provide, undertake for himself the same obligations as those imposed upon the Grantee, its successors and assigns by this covenant, and (b) furnish the original of such agreement to the Administrator of the Federal Aviation

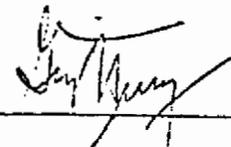
Administration, or his successor, upon his request therefor. This covenant, shall run with the land hereby conveyed, and shall in any event, without regard to technical classification or designation, legal or otherwise, be binding to the fullest extent permitted by law and equity for the benefit of, and in favor of the Grantor and enforceable by the Grantor against the Grantee, its successors and assigns.

Provided, however, that this deed is made and accepted upon the following additional condition subsequent, which shall be binding upon and enforceable against the Grantee, its successors and assigns: The purposes for which this deed is made shall be conducted in compliance with, and the Grantee, its successors and assigns shall comply with and shall require any other person (any legal entity) who through contractual or other arrangements with the Grantee, its successors or assigns is authorized to provide services to effectuate the purposes hereof to comply with, all requirements imposed by or pursuant to the regulations of the Department of Transportation as in effect on the date of this deed (49, CFR 21) issued under the provisions of Title VI of the Civil Rights Act of 1964, and the Grantee, its successors and assigns shall promptly take and continue to take such action as may be necessary to comply with this condition. In the event of any breach of this condition, regardless of the cause of such breach, all right, title, and interest in and to the above described property, in its then existing condition, including all improvements thereon, shall revert to and become the property of the United States upon demand made in writing by the Administrator of Federal Aviation Administration or his successor in function. In such event the United States shall have the immediate right of entry upon said property, and the Grantee, its successors and assigns shall forfeit all right, title, and interest in said property and in any and all of the tenements, hereditaments and

appurtenances thereunto belonging, and shall take such action and execute such documents as may be necessary or required to evidence transfer of title to such property to the United States. The failure of the Administrator of Federal Aviation Administration, or his successor in function, to insist upon complete performance of this condition in any one or more instances shall not be construed as a waiver or relinquishment of future performance thereof, but the obligation of the Grantee, its successors and assigns, with respect to such future performance shall continue in full force and effect.

IN WITNESS WHEREOF, the party of the first part has caused this quitclaim deed to be executed in its name and on its behalf the day and year first above written.

UNITED STATES OF AMERICA  
Acting by and through the  
ADMINISTRATOR OF GENERAL SERVICES

By 

WITNESSES:

STATE OF NEW YORK )  
 ) SS:  
COUNTY OF NEW YORK )

On this 7<sup>th</sup> day of February 1980, before me personally appeared GERALD J. TURETSKY, Regional Administrator, Region 2, New York, General Services Administration, 26 Federal Plaza, New York City, New York, 10007, to me known and known to me to be the individual described in and who executed the foregoing instrument and to be the Regional Administrator, Region 2, New York, General Services Administration, duly delegated, empowered and authorized by the Administrator of General Services, and who acknowledged that he executed the foregoing instrument for and on behalf of the Administrator of General Services, acting for and on behalf of the United States of America for the purposes and uses therein described.

*Barbara Gerwin*

BARBARA GERWIN  
Notary Public, State of New York  
No. 31-1415876 Qualified N. Y. Co.  
Commission Expires March 30, 1981



State of New York }  
County of New York, } ss.:

No. 79968 Form 1

I, NORMAN GOODMAN, County Clerk and Clerk of the Supreme Court of the State of New York, in and for the County of New York, Court of Record, having by law a seal, DO HEREBY CERTIFY pursuant to the Executive Law of the State of New York, that

*Barbara Gerwin*

whose name is subscribed to the annexed affidavit, deposition, certificate of acknowledgment or proof, was at the time of taking the same a NOTARY PUBLIC in and for the State of New York duly commissioned, sworn and qualified to act as such; that pursuant to law, a commission or a certificate of his official character, with his autograph signature has been filed in my office; that at the time of taking such proof, acknowledgment or oath, he was duly authorized to take the same; that I am well acquainted with the handwriting of such NOTARY PUBLIC or have compared the signature on the annexed instrument with his autograph signature deposited in my office, and I believe that such signature is genuine.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal this

FEB 8 1980  
FEE PAID \$3.00

*Norman Goodman*  
County Clerk and Clerk of the Supreme Court, New York County

(Official Seal)

Attest \_\_\_\_\_

Title \_\_\_\_\_

ACCEPTANCE

The foregoing Deed is hereby accepted and the undersigned agree, by this acceptance, to assume and be bound by all of the obligations, conditions, reservations, covenants, and agreements therein contained.

COMMONWEALTH OF PUERTO RICO

PUERTO RICO PORTS AUTHORITY

By: *Carlos Romo Guada*  
Governor

By: *[Signature]*  
Acting Executive Director

ACKNOWLEDGMENT

COMMONWEALTH OF PUERTO RICO }  
MUNICIPALITY OF SAN JUAN } SS

Before me, José Eladio Figueroa a notary public in and for Puerto Rico, on this day personally appeared Carlos Romo Guada and José A. Reines known to me to be the persons whose name is subscribed to the Acceptance of the Deed dated February 7, 1980 and acknowledged to me that they executed the same for the purposes and considerations therein expressed and as the persons duly authorized to execute such acceptance on behalf of the Puerto Rico Ports Authority.

Given under my hand and seal of office this Twenty-one day of February 1980, at San Juan, Puerto Rico.

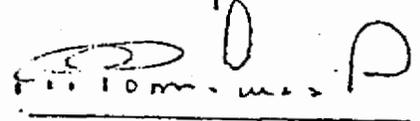
Affidavit No. 302  
(My commission is for life)

*[Signature]*  
Notary Public

CERTIFICATE OF GRANTEE'S ATTORNEY

I, RAFAEL RODRIGUEZ GUASP, acting as attorney for P.R.P.A. herein referred to as the "Grantee", do hereby certify: That I have examined the foregoing Quitclaim Deed and the proceedings taken by the Grantee relating thereto, and find that the acceptance thereof by the Grantee has been duly authorized and that the execution thereof is in all respects due and proper and in accordance with the laws of the Commonwealth of Puerto Rico, and further that, in my opinion, the quitclaim deed constitutes a legal and binding compliance obligation of the Grantee in accordance with the terms thereof.

Dated at San Juan this 27<sup>th</sup> day of Feb. 1960

  
Rafael Rodriguez Guasp

Parcel A-2; (2) the continuing perpetual right to remove, raze, and destroy existing buildings, structures or portions thereof, and to prohibit the future construction of buildings or portions thereof, other structures or portions thereof, embankments of earth or other material as necessary to eliminate any obstruction above the glide angle plane surface and/or transitional surfaces of said Parcel A-2, and otherwise to comply with currently effective criteria or standards in Part 77 of the Federal Aviation Regulations as applied to the Culebra Airport; (3) the right of flight for the passage of aircraft in the airspace above the surface of Parcel A-2 together with the right to cause in said airspace such noise as may be inherent in the operation of aircraft now known or hereafter used for navigation of or flight in the said airspace, and for the use of said airspace in connection with landing on, taking-off from or operating on the Culebra Airport; and (4) the right of ingress to and egress from, and passage on and over the said Parcel A-2 for the purpose of exercising the rights granted by said easement:

SUBJECT, HOWEVER, to existing easements for public roads and highways, public utilities, railroads and pipelines: RESERVING, HOWEVER, to the landowner of Parcel A-2 and its assigns, all right, title, interest and privileges as may be exercised and enjoyed in and to said Parcel A-2 without interference with or abridgment of the rights granted by said easement.

PARCEL A-2 (AVIGATION CLEARANCE  
EASEMENT) METES AND BOUNDS  
DESCRIPTION

All that parcel of land located in Ward Flamenco of the Municipality of Culebra, Puerto Rico comprising 27.8439 acres, more or less, equivalent to 28.6690 "cuerdas", equivalent, in turn, to 11 hectares, 26 ares and 80.910 centiares, bounded on the North by Lot No. 52 of the Culebra Sub-Division, on the East by other lands of the United States of America (Parcel A-1 of the Culebra Airport Tract), on the South by other lands of the United States of America; and on the West by Lot Nos. 57 and 58 of the Culebra Sub-Division.

Said parcel is more particularly described by metes and bounds as follows:

"For a point reference commence at Concrete Monument "U.S.C. & G.S." located at coordinates Y=180,567.27 feet; X=891,889.19 feet of the Plane Coordinate System (Lambert) for Puerto Rico which system originates at the intersection of parallel of latitude 17 degrees 50' and meridian of longitude 66 degrees 26' with a constant of 500,000 feet added to the "X" value from meridian

Y=176,117.38; X=892,106.34; thence S 59 degrees 04'57" E, a distance of 1,785.00 feet to Point No. 303 with Lambert Coordinates Y=175,200.24; X=893,637.71 feet; thence, S 30 degrees 55'06" W, a distance of 97.27 feet to Point 13 A, a point on the boundary of U.S.N. Lot 86 with Lambert Coordinates Y=175,116.79; X=893,587.73 feet; thence, along said boundary, S 85 degrees 05'16" W, a distance of 504.80 feet to Point 14; with Lambert Coordinates Y=175,076.47; X=893,084.60; thence, N 65 degrees 50'10" W a distance of 669.31 feet to Point 15 with Lambert Coordinates Y=175,350.45; X=892,473.94; thence, N 80 degrees 43'03" W a distance of 666.13 feet to Point 16 with Lambert Coordinates Y=175,457.90 feet; X=891,816.53 feet; thence, S 23 degrees 32'28" W a distance of 160.74 feet to Point 16A a point on the right edge of a public road leading to the town of Dewey, with Lambert Coordinates Y=175,310.54 feet; X=891,752.33; thence, along said road N 44 degrees 06'12" W, a distance of 571.10 feet to Point 31A with Lambert Coordinates Y=175,720.64; X=891,354.87; thence, N 40 degrees 29'52" W, a distance of 243.66 feet to Point 32A with Lambert Coordinates Y=175,905.93; X=891,196.63; thence, N 44 degrees 40'34" W, 473.92 feet to Point C8A with Lambert Coordinates Y=176,242.93; X=890,863.42 feet; thence, N 57 degrees 50'34" W, 780.31 feet to Point C10A, with Lambert Coordinates Y=176,658.18; X=890,202.78; thence, N 46 degrees 34'56" W, a distance of 98.85 feet to Point C11A, with Lambert Coordinates Y=176,726.12 feet; X=890,130.98 feet; thence N 34 degrees 53'04" W, 116.83 feet to Point C11B with Lambert Coordinates Y=176,821.96; X=890,064.16; thence N 34 degrees 53'16" W, 296.97 feet to Point C12A, with Lambert Coordinates Y=177,065.56 feet; X=889,894.30; thence, N 20 degrees 07'23" W, 356.39 feet to Point C13A; with Lambert Coordinates Y=177,400.19; X=889,771.69 feet; thence, N 23 degrees 37'30" W, 194.96 feet to Point 42A, with Lambert Coordinates Y=177,578.81; X=889,693.56; thence, N 30 degrees 18'00" W, 103.80 feet to Point C14A, with Lambert Coordinates Y=177,668.43 feet; X=889,641.19; thence, N 34 degrees 15'37" W, 267.02 feet to Point 44A, with Lambert Coordinates Y=177,889.12; X=889,490.67; thence, N 37 degrees 50'03" W, 290.41 feet to Point C15A with Lambert Coordinates Y=178,118.48; X=889,312.74 feet; thence, N 37 degrees 49'55" W, 338.88' to Point INT-1A a point on the south boundary of Lot 52 of the Culebra Sub-Division with Lambert Coordinates Y=178,386.13 feet; X=889,104.89 feet; thence, along said boundary S 81 degrees 45'31" E, 703.49 feet to Point No. 2, the TRUE POINT OF BEGINNING already described."

TOGETHER WITH a perpetual easement as follows:

2. INTEREST IN THE LAND PARCEL HEREINBELOW DESCRIBED AS PARCEL A-2, FOR THE PURPOSES INDICATED:

- a. PARCEL A-2-AVIGATION CLEARANCE EASEMENT-DESCRIPTION:

A perpetual and assignable easement, over, and upon the land designated Parcel A-2 in Exhibit "A" hereof and herein-below described by metes and bounds, said easement consisting of (1) the continuing perpetual right to top trees, bushes, shrubs, or any other perennial growth or undergrowth which infringe upon, extend into, or extend above the 5.8:1 approach surface and/or transitional surfaces of said

66 degrees 26'; run thence, along the common boundary of Lots 47 and 48 of the Culebra Sub-Division, South 00 degrees 59 minutes 30 seconds West 3,280.37 feet to Point No. 3, a point on the north boundary of the former U.S. Navy Auxiliary Landing Facility property with Lambert Coordinates Y=177,286.90 feet; X=891,945.93 feet, as this point is described in Deed of Conveyance No. 4 dated March 16, 1939; thence, along the South boundary of Lot No. 47 of the Culebra Sub-Division, N 65 degrees 06'30" W, a distance of 2,365.48 feet to Point No. 2 of said boundary with Lambert Coordinates Y=178,284.14 feet; X=889,800.95 feet; thence, N 81 degrees 45'50" W, a distance of 703.49 feet to Point INT-1A, which point is the true point of beginning of this survey, said point being more particularly located on the right edge of the public road leading to Punta Flamenco which road meanders along the east boundary of this Parcel. From said TRUE POINT OF BEGINNING proceed thence S 37 degrees 49'55" E, along the right edge of said road, a distance of 338.88 feet to Point C15A with Lambert Coordinates Y=178,118.48'; X=889,312.74' thence, continuing along the right edge of said road, S 37 degrees 50'03" E, a distance of 290.41 feet to Point 44A with Lambert Coordinates Y=177,889.12 feet; X=889,490.37 feet; thence, along said road S 34 degrees 15'37" E, 267.02 feet to Point C14A with Lambert Coordinates Y=177,668.43 feet; X=889,641.19 feet, thence, along said road, S 30 degrees 18'00" E, 103.60 feet to Point 42A, thence, S 23 degrees 37'30" E, a distance of 194.96 feet to Point C13A; thence, S 20 degrees 07'23" E, 356.39 feet to Point C12A; thence, S 34 degrees 53'16" E, 296.97 feet to Point C11B with Lambert Coordinates Y=176,821.96 feet; X=890,064.16 feet which point is the southeast corner of the Parcel; thence, N 64 degrees 47'37" W, 1,581.34 feet to Point 22A, the southwest corner of the Parcel on the west boundary of the former U.S. Navy Auxiliary Landing Facility property, with Lambert Coordinates Y=177,495.42 feet; X=888,633.40 feet; thence, along said boundary, N 04 degrees 50' 21" W, 397.82 feet to Point 23 with Lambert Coordinates Y=177,891.82 feet; X=888,599.84 feet; thence, along said boundary N 15 degrees 16'14" W, 232.82 feet to Point 24; thence, along said boundary N 58 degrees 14'32" W, 141.07 feet to Point 25, thence N 33 degrees 21'37" W, 390.25 feet to Point 1, the northwest corner of the Parcel and of the former U.S. Navy Auxiliary Landing Facility property with Lambert Coordinates Y=178,516.62 feet; X=888,203.97 feet; thence, along the north boundary of said property, S 81 degrees 45'30" E, 910.32 feet to Point INT-A1, the point of beginning already described."

Parcel A-1, above described form part and will be segregated from that certain property known as the Former U.S. Navy Auxiliary Landing Facility - Culebra, acquired by the United States of America from the Commonwealth of Puerto Rico by Deed of Transfer No. 4 executed March 16, 1939 before Notary Public Manuel Iriarte Miro, recorded in the Registry of Property, Humacao, section, at Page 236, Book 3 of Culebra, Property No. 256, Fourth inscription.

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX H

NEWSPAPERS/JOURNALS

APPENDIX H

NEWSPAPERS/JOURNALS

Table of Contents

- H-1. "The Navy vs Culebra" (B-33)
- H-2. "Culebra Act III - Navy Asked to Zero in Focus" (B-32)
- H-3. "Puff-Round to be used on Culebra" (B-34).
- H-4. "Life as usual on Culebra" (B-126).

by GREG WALTER

Imagine a tiny island set deep in the Caribbean: poinsettias, flamboyants and Christmas candles moving gently in an afternoon wind, blowing in across a sheltered bay as the people of Culebra enjoy the last moments before the church bells toll the end of the day's siesta.

Add to this idyllic picture a few new sounds: the crunch of 500-pound bombs exploding less than a mile and a half from the neat, tiny shacks where children play in dusty front yards. Compound that with the whine of jets, echoing machine-gun fire, screaming rockets and the triple-throated boom of naval shells as they tear away at a hillside above a lovely lagoon once crowded with flamingos.

This has been the life on Culebra, an island some 20 miles east of Puerto Rico. For almost 30 years a large part of Culebra has been used as a U.S. Navy bombing and gunnery range. This was all right with Culebrans during World War II, and all right with them afterwards, when the "attacks" slacked off. But three years ago the Navy began to step up its pounding of Culebra until it reached an awful crescendo early this year. At that point the Culebrans began quietly to fight back. Sensing finally that it had a potentially embarrassing problem on its hands, the Navy has cut the bombings sharply in the past few weeks. But it is probably too late. The Culebrans now want the Navy out altogether.

At least one Pentagon official has admitted out loud that the Navy "hasn't been doing a very good job of public relations" on Culebra. At the same time, however, the Navy has made it clear that it is not going to be told what it can or cannot do by a group it has studiously regarded as non-people for all these years.

The crux of the problem is that Culebra is one corner of a triangulated zone that the Navy calls the Atlantic Fleet Weapons Range. The much larger island of Vieques (considerably less affected by the attacks) and the huge \$245 million naval complex at Roosevelt Roads on the eastern tip of Puerto Rico are its other two corners. Culebra, says the Navy, is ideal for target practice because of its nearness to the control center at "Rosey" Roads, and because it lies in deep water where even the largest warships can navigate safely.

The Navy is on Culebra because of Executive Order 8684, signed by President Franklin D. Roosevelt in 1941, which established the Culebra Island Naval Defense Sea Area. Roosevelt's order allowed the Navy to expropriate more than 2,000 of the island's 7,000 acres to cover the "footprint" or danger zone on the range. Homesteads on the north side of the island were literally torn down and targets erected. Culebra's 45-year-old Mayor Ramón José Feliciano recalls: "They came and told us we had 48 hours to get out. They cut down my house, the place where I was born—it is the second 'tank' you see over there on the hillside."

The order also set up a restricted zone three miles wide around the island through which only U.S. shipping can pass freely. Private planes and ships must call "Big Mary," the Navy's designation for the range control officer, for special



A Culebra fisherman and a live Navy shell

## The Navy vs. Culebra

permission to approach or leave the island. To all intents and purposes, the 700 islanders are prisoners on their own land.

Not just American ships fire on the island. The U.S. has extended punching bag privileges to 20 allied nations. Although no one has been killed during actual shelling, recent near misses have become more and more disturbing to Culebrans. Not long ago the Navy inadvertently threw a shell into the fresh-water supply of the island's one remaining town, Dewey. A bombing exercise one night last month became so intense and unbearable that islanders left their houses and huddled together in the streets, praying. "The Americans," said one small child, "are killing us."

Culebrans are American citizens and proud of it. They have fought in all the country's wars and currently boast 12 veterans of Vietnam, but it has become a bad time on the island for mainland Americans.

The Americans are responsible for the dead fish that pile up on beaches to the east of the island. The Americans have fire-bombed the cays which, ironically, once were declared bird sanctuaries by Theodore Roosevelt. Today they are barren of the swarming birds which used to arrive each year to breed.

And it is the Americans who are depicted in childish mimeographed drawings and dialogue that show up today in the streets of Dewey. The Americans, they say, want Culebrans to leave the island "to become tomato pickers" in the north.

Nobody starves on Culebra and Culebrans feel that they're doing well enough economically. The island's few remaining fishermen manage a liv-

## SPECIAL REPORT

ing gathering lobsters in waters theoretically forbidden to them. Almost all of the fishermen have had close calls from shells dropping nearby, and some of them bitterly believe that Navy pilots deliberately fire near them to frighten them away. What little cattle farming is left is done on grazing land owned by the Navy, and cattle must be driven out on two-hour notice from "Rosey" Roads.

Something far less tangible than too much bombing finally goaded the Culebrans to direct action. It is a matter of arrogance. With all the detachment of a 19th Century colonial power, the Navy and the rest of the U.S. often seem to Culebrans to act as if there were no people at all on the island. Congressmen enjoying winter junkets to Roosevelt Roads seldom visit Culebra. Conversely, the Navy has refused to turn over two acres of unused land so that the people can build a hospital for which they already have the money. Similarly, it has refused to cede land for a ball park. And it staunchly defends its ownership of one half the island's burial grounds.

Up to now, Culebrans have maintained a certain equanimity. Those who need new homes simply squat on Navy land. A sandlot ball field has been carved from Navy property anyhow, and the dead are buried in Navy soil. The hospital problem remains unsolved.

First opposition to the Navy's see-nothing policy came about two years ago when citizens passed the hat and sent Mayor Feliciano and the island's school principal, John K. Vincent, to Washington. Naively, Culebrans believed that someone would listen and do something about the problems. All Feliciano and Vincent got, they say, were promises which have not been fulfilled.

Although an appeals court recently threw out their efforts to have the 1941 order vacated, Culebrans say they will take the matter to the Supreme Court. A joint committee of the Puerto Rican senate has petitioned President Nixon to order a reexamination of the Navy's policies on Culebra.

Meanwhile, the activist elements, helped out by sympathizers from Puerto Rico, have begun to make themselves felt. Sail-ins, swim-ins and sleep-ins—all conducted within the range area—have drawn attention to Culebra's problems. There have been bitter charges that two former governors of Puerto Rico, Luis Muñoz Marín and Roberto Sánchez Vilella, once bargained with Pentagon officials to sell Culebra to the Navy. Both men have denied the charge.

For its part, the Navy still seems confused as to why the natives are restless. Tenth Naval District Commandant Admiral A. R. Matter "adamantly refuses to discuss the matter," in the words of his public affairs officer in San Juan. In Washington, Joseph A. Grimes Jr., special civilian assistant to Secretary of the Navy John H. Chafee, takes a more circumspect view: "Things," he says, "have gotten slightly out of hand. I think we'll have to sit down and talk the problems over."

ON 29 MAY, The JOURNAL submitted to the Navy a list of questions concerning Culebra. The answers, received 12 June, are reproduced in full below (answers in italics):

1. We understand that Commander, Caribbean Sea Frontier last week asked the Atlantic Fleet Weapons Range facility for a complete report of alleged recent misfires, wild shots, and off-target firing incidents on the Culebra/Culebrita island bombardment and aerial gunnery ranges. Please provide a detailed summary of these reports, by date, location, type and cause of incident, and findings with respect to civilian or military injuries or casualties.

*The report on the alleged "misfires, wild shots", etc., is not complete and not compiled. When it is, we will let you know.*

2. We understand that late in 1968, a Navy pilot crashed his aircraft and was killed on a target just off of Luis Pena Cay. Please provide the date and details of this accident.

*An A4C Aircraft which had conducted practice dive bombing and rocket attacks on targets west of Culebra crashed during its landing approach to NAVSTA ROOSEVELT ROADS. The plane went into the sea four miles from the end of the runway. Cause of the crash was undetermined. This happened 6 May 1969.*

3. We understand that two Navy pilots collided and both died on or near the island of St. Thomas in 1967 or 1968 enroute to or from operations in the Culebra area. Please provide the date and details of this accident, if it occurred.

*Two A4C Aircraft conducting daylight bomb and rocket practice off Culebrita collided on 8 November 1968 south of Culebra and crashed into the sea. Both pilots ejected. One received minor injuries and the other was not hurt. Both were picked up by helos. Both planes hit the water well away from the shore.*

4. On Saturday, 23 May, a Navy demolition team searched for and blew up ordnance found near the beaches of Culebra. Please provide details of this activity: where was the ordnance found (please mark attached map with an "X"), how many rounds of what type were found, and who, by name (Culebran or Navy person), guided the team to the sites at which the ordnance was found?

*About 23 May a Navy EOD team exploded ordnance in the impact area on the Northwest Peninsula. The largest piece exploded was a 100 lb. bomb just off the shore of the impact area. This was done on a sanitation sweep.*

5. Does the Navy consider the Culebran beach at Flamingo Bay to be within the "impact area" or within the "safety zone" on the island's northwest peninsula? If the beach at Flamingo Bay is not within the impact area, why did Roosevelt Roads (as alleged in a written statement of ENI Dennis Hooper) grant permission on Friday, 22 May, for Navy personnel at the Culebran observation post to fire mortar rounds toward the beach? If these rounds were not fired at or toward an authorized target within the impact area, please name and locate with a circled "X" on the enclosed map the approximate aim point.

*Part of the beach at Flamingo Bay is in the impact area and part of it is not. The mortar rounds fired on 22 May were not fired toward the beach. They were fired 10 degrees to the right (or to seaward) of the tip of NW peninsula. The angle measured from the O.P. The rounds landed about 1500 yards from Flamingo beach and three other rounds landed about 2300 yards from Flamingo beach.*

6. Is the width of the safety "footprint" of Condor, Standard ARM, Hobo (glide bomb), and of any other new missiles which had been planned to be fired on the Culebran target range larger than the safety footprint of Walleye? If so, can you specify approximately how much larger?

*Based on development tests the footprint for the Standard ARM is larger and of a different shape than that of Walleye. The shape and size of the footprint are classified. The footprints for the other weapons mentioned are yet undetermined.*

... on the southern tip of the island. But that was seen by some as "nickel and dime relief," especially since many Culebrans regularly violate the requirement to obtain Navy permission by coming and going at will. The Culebrans want no more interim relief. They want the order rolled back, and/or the Navy to cease use of the island for firing.

"I personally believe this is of such magnitude," Bennett said at the hearing, "that . . . the White House itself ought to be involved in it to a degree. And therefore, I think at the moment that at least an offer to the White House to become involved in this decision is a wise course for the Committee to take.

"We will submit the evidence to whoever will look at it in the White House," Bennett said, "and discuss it with the highest level of our government and try to see if they can resolve it in some manner."

Bennett said also that a Subcommittee review of the Navy's study of possible alternatives to Culebra should occur "before any final decision . . . to see if the White House wants to be involved in it."

The JOURNAL has learned, meanwhile, that certain parties in the White House have already involved themselves in the Culebran problem and that an earlier disposition in some quarters to let the Navy resolve the matter itself has given way to a more involved stance.

#### White House Offer a Feint?

Sources close to the Culebran protesters, however, tell The JOURNAL they feel Bennett's offer is no more than a procedural feint to allow the Navy to ride out this storm.

They feel the White House position will be simply to let it rest with the Navy and not deal with it "until a crisis arises" (such as a fatal firing incident on the island), or until it becomes politically embarrassing for the President to continue ignoring it.

There are already the incipient beginnings of a partisan tinge to the Culebran issue, with the interest being taken in the affair by Senator Edward M. Kennedy (D-Mass) and other Senators on the Hill. (There is presumably no partisan angle to the already expressed concern of Republican Senator Edward Brooke, also of Massachusetts.)

Kennedy has recently requested SecNav John Chafee himself to investigate and report on alternative uninhabited sites which would serve Naval training purposes and would permit the return of the entire island to the Commonwealth of Puerto Rico.

Whatever some may allege is the reason for the White House suggestion, a sincere commitment to his duties lies behind Bennett's trip to Culebra. At the hearing, one of the witnesses had expressed the hope that the Chairman would "go there when they are not shooting."

Bennett said he appreciated the invitation, but added, "I am not a traveling Congressman"—a remark he tempered by saying, "If it seems helpful to go there, I would go there."

Despite the witness' warning about not going while shooting is in progress, Bennett told The JOURNAL that he and his colleagues hope to view a demonstration of target shooting while there, and to spend time in Dewey talking with inhabitants and officials.

In a related vein, when Culebra's Mayor Ramon Feliciano told the Subcommittee he and his friends were happy to be in Washington to answer questions, a newsman quipped it was because it was "safer" than their homeland.

#### The Courses Open

What courses of action are open to the White House, should it decide to become involved?

armed forces JOURNAL/20 June 1970

if we are going to stay there.  
Representative Charles E. Bennett (D-Fla)  
Chairman, House Armed Services Real Estate Subcommittee

Culebra,

ACT III:

Culebra

## Navy Asked to Zero in on Focus

Committee May Go For It

By Bruce Cossaboom and Ben Schemmer

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A MISSILE OF GOODWILL from the Congress will impact on the embattled island of Culebra in the very near future.

Representative Charles E. Bennett (D-Fla), Chairman of the House Armed Services Real Estate Subcommittee, which is considering the Navy's proposal to acquire more target safety zone land on the Puerto Rican island of Culebra, told *The JOURNAL* he and possibly other members of the Subcommittee would make a personal visit to the island either this past weekend (at *JOURNAL* presstime) or this coming weekend.

Bennett said he had been invited by the Culebrans to make the trip and that he was accommodating this request and going "simply to see things on the spot"—to measure the psychological impact of the Navy's proposal on the islanders.

The announcement came about a week after a protracted and often difficult but illuminating hearing on the Navy's twin proposals—to acquire 2,350 acres of land for target practice expansion and to dispose of 680 acres on the southern coastline near Dewey.

A parade of nearly a score of Culebran and Puerto Rican witnesses urged the Subcommittee—sometimes emotionally, sometimes with logic, at times with deference, occasionally antagonistically—to reject the Navy's proposal. The islanders now want the Navy to leave altogether.

The Navy literally stuck by its guns, arguing that Culebra is an indispensable link in the Vieques/Culebra/Roosevelt Roads target complex of the Atlantic Fleet Weapons Range, and that its studies have demonstrated conclusively that nothing comparable is available in the Atlantic Ocean. "Why should we leave?" a high Navy official asked *The JOURNAL*.

The Culebrans, meanwhile, have filed with the Supreme Court a petition for a writ of certiorari, asking the nation's highest tribunal to invalidate the Executive Order which they claim has virtually strangled their economy at a time when there is no war, actual or threatened.

At the hearing, the possibility of White House involvement in the final decision was raised by Chairman Bennett. *The JOURNAL* has learned that senior aides at the White House have already taken a keen interest in the controversy, although it has not been formally presented to them (except in letters from Culebrans).

Meanwhile, at *JOURNAL* presstime, Navy Secretary John Chafee's office confirmed that no request by the Culebrans for a personal meeting with the Secretary has been received. *armed forces JOURNAL/20 June 1970*

by the SecNav's office, although Secretary Chafee is reported to be following the case closely.

Washington attorneys for the municipality of Culebra have been critical of the fact that there has been no face-to-face confrontation between Secretary Chafee and the Culebrans.

A decision to call upon the Commander-in-Chief to be the ultimate arbiter of Culebra's dispute with the Navy—a dispute perhaps now regarded as too hot a political potato for Congress to decide alone—would not be inappropriate.

### That 'Funny Valentine'

After all, the problem for the Culebrans began in the White House when the late President Franklin D. Roosevelt, on 14 February 1941, signed Executive Order No. 8684—establishing the Culebra Island Naval Defense Sea Area and Culebra Island Naval Air Space Reservation—shutting off air



ON FRIDAY, 22 MAY, six mortar rounds were fired into Luning Bay off Culebra, while several children were swimming off the beach. LT2 Thomas B. Keenum, USN, took this photo during that firing.

**Inspector General, Atlantic Fleet**

REPRODUCED BELOW, in its entirety, is the text of Admiral Moore's statement prepared for presentation before the House Armed Services Real Estate Subcommittee hearings (10-11 June).

TO GAIN AN UNDERSTANDING of the Navy's requirements on the island of Culebra, it is important first to understand the Navy's basic training requirements, why the Atlantic Fleet Weapons Range complex is essential in meeting these requirements, and why the facilities in the immediate Culebra target array are an essential ingredient in the effective operation of the overall fleet weapons range.

Training naval weapons systems and personnel to a full state of combat readiness requires three basic levels of training: individual unit training for basic weapons proficiency; inter-type training—or training between units—to develop basic coordination; and major force and fleet exercises. The major exercises develop essential command and control capabilities that enable the fleet to function as a fully integrated force in a multi-threat combat environment—this is an environment where the full range of air, surface and sub-surface combat must be joined—including electronics and missile warfare. The operations of fleet units in Korea and Southeast Asia have forcefully demonstrated the hard requirement for this full range of capabilities if our Navy is to be responsive to the demands of national defense now and in the future.

I don't believe there is serious question about the fact that our Navy will require combat systems of ever-increasing capabilities and complexity as the advance of man's technology has its effect on the capabilities of our potential adversaries. This constant evolutionary development in weapons systems will place increasing demands on our ability to train our men, ships and aircraft crews to the highest practicable level of offensive and defensive capabilities—and this, Gentlemen, is what the Atlantic Fleet Weapons Range is all about.

Now just what is the range? The Atlantic Fleet Weapons Range has its nerve center at Roosevelt Roads. This integrated range is comprised of:

- A) The underwater range at St. Croix where advanced tests involving submarines and other ASW forces are conducted.
- B) Installations at St. Croix, Roosevelt Roads and St. Thomas where information for the control of drone targets is obtained for missile firing at sea.
- C) An extensive micro wave system with links on Culebra, Luis Pena, St. Thomas, St. Croix, Pico del Este, western Vieques and Roosevelt Roads.
- D) Large sea areas NE and SE of Puerto Rico for missile firings (surface-to-air and air-to-air) and fleet exercises.
- E) The inner range—the Culebra Vieques complex.

You have already been advised that, in recent years, the Navy has invested several hundred million dollars in facilities at the Atlantic Fleet Weapons Range. If the full value of the supporting site—Naval Station Roosevelt Roads—and the advanced instrumentation of the range are considered, this investment is considerably greater.

In the current period of reduced military budgets, why has the Navy felt it was essential to invest to this extent in such a weapons training activity? The answer to this lies in the decision to strive for a modernized fleet of fewer but more combat effective units, rather than a larger fleet of ageing units of lesser capability. Thus, while it might appear that a smaller fleet in numbers would reduce the need for a training facility such as the weapons range, the opposite is true. We must increase training in these new ships and aircraft to take maximum advantage of their considerably greater combat capabilities. Only in this manner can the Navy close the gap between what this country needs in defense, and what it can afford to spend.

If the validity of the Navy's need for a training complex such as the Atlantic Fleet Weapons Range is accepted, the next step is

*Continued on page 27*

maintain on the basis of an executive order issued during World War II, the seas surrounding an entire island inhabited by U.S. citizens as a defensive sea area from which all persons are excluded except as the military permits."

So it would seem that the Culebrans' best avenue for relief would be, not the Navy, the Congress, or the Supreme Court but the White House.

It is the President whom they must convince that the need their island more than the Navy—even their country does.

The President may have to weigh in the executive scale two most stubborn quantities—the sentimental patrimonial claims (assuming the Court denial of constitutional rights) of a group of people who are truly, in a legally realistic sense second-class citizens, and the Navy's strategic weapon testing needs in a time every bit as perilous as 1941.

### A Hole in the Cocoon

The hearings got off to an auspicious start when Assistant SecNav Frank Sanders (Installations and Logistics) announced that the Navy was boring a hole in Culebra's leg cocoon by establishing a free-access sea lane to Dewey on the harbor through which boats may pass without checking with the Navy.

"Additional relaxation of controls consistent with safety may be possible and the Navy will welcome suggestions from the people of Culebra," Sanders said. (For the rest of Sanders' statement, see full text.)

Sanders was followed by a parade of witnesses from Culebra and Puerto Rico (and two Washington lawyers whose statements were quoted in last week's JOURNAL), who detailed in many ways the bad effects they say the shellin has had on the economy and the people of the island.

Chairman Bennett conducted the hearings with the aplomb of a prosecuting attorney for both sides. His seemingly antagonistic stance toward the Culebrans' position the first day—followed the next by incisive and acerbic almost tongue-in-cheek probing of the Navy's rationale for having all its target practice "just so," came as no surprise to anyone who could see he was playing the devil's advocat role to the hilt.

He constantly reminded the Culebrans that other people in the United States have been forced to give up cherished homeland property and freedom of movement in the name of national defense or to accommodate the irresistible force of eminent military domain.

Bennett said there are several states in which a large percentage of the total land area is owned by the federal government. He noted that the area for many military reservations has come from land previously owned by private citizens and that people are prohibited from trespassing on many areas. (At least 25 signs on Culebra warn the people: "Propiedad Federal. Prohibido el paso." "Federal property No trespassing.")

In Bennett's home district of Jacksonville, for example (geographically, the largest city in the United States), there are 36,700 acres of Naval installations out of a total of 497,280 acres.

One shore community, Mayport, is now nearly encircled and is much smaller than its original size, Bennett told the Culebrans.

Bennett noted that their objection that Navy planes overfly Culebra with loaded weapons is "not a unique one and that he did not "know of many cities in the U.S. over which dozens of planes, with loaded weapons, do not fly daily." A bombing range is used by Navy pilots near Jacksonville, but only practice, not live, ammo is dropped over the city.

and, although it seems unlikely at the moment, a stronger course of action could be followed.

If he felt such a course were indicated, the President has the authority to modify the Executive Order even further than the Navy has already done, or revoke it altogether, or issue a new one to take care of the Culebra situation.

But the Culebrans are looking to all three branches of the federal government for help and have gone to the Supreme Court, raising some of these constitutional points:

- Whether the unusual restrictions imposed on the Culebrans represent a curtailment (not similarly imposed on known Communists, for example) of their liberty of movement to such an extent as to be prohibited under the Fifth Amendment.

- Whether enforcement of the 1941 Executive Order (and whether it should still be considered constitutional—another point at issue) represents a taking of property without prior compensation and without the due process of law, also spelled out in the Fifth Amendment.

The U.S. First Circuit Court of Appeals has already rebuffed the Culebrans in a decision handed down 11 March. But they have now asked the Supreme Court to take the case on a writ of certiorari. No word had come at JOURNAL presstime on Supreme Court acceptance or rejection.

#### Wartime Measures in Peacetime?

The Culebrans' attorneys have told the Supreme Court that the "issues raised by the existence and enforcement of defensive sea area orders against civilians in time of peace are of continuing importance and should be decided by this Court."

"The power to create defensive sea areas both in war time and peace time is constitutional," the Appeals panel has ruled, "and the enforcement of Executive Order 8684 does not constitute either a taking of property without compensation or constitute an unconstitutional restriction of personal liberty. . . ."

"In fact," the Court maintained at another point in its decision—indicating perhaps how strongly held its views were—"as long as Puerto Rico remains a part of the U.S., it would probably be unconstitutional for Congress to allow Puerto Rico any say whatever over maritime regulations involving national defense."

Title 18 of the U.S. Code, Section 96, gave the President statutory authority to establish defensive sea areas in both wartime and peacetime, and the President has not abused his discretion in continuing in effect Executive Order No. 8684.

The Court said the government selected the "least drastic means of achieving the congressional objective of safeguarding the national security of the U.S. In any event, this Court cannot and will not, under these circumstances, substitute its judgment for that of the Executive Branch in a matter of this nature."

Legal sources close to the Culebrans concede that it is a "long shot" that the Supreme Court will even agree to review the complaints, much less substitute its judgment for that of the lower court.

They say that if the Executive Order were to be invalidated (or the statute in question be deemed unconstitutional), this would certainly prove a "fatal blow to Navy operations" on Culebra, for it would permit fishing all around the perimeter.

Apparently the unique feature of the Culebrans' case—to the Supreme Court, the President, or whatever legal figure would be disposed to aid them—is the unarguable contention that FDR's "funny valentine" places the residents, as their argument before the appeals body put it, "in a 'legal cocoon,' the penetration of which is subject to the exclusive and armed forces JOURNAL/20 June 1970

## Asst SecNav (I&L)

REPRODUCED BELOW, in its entirety, is the text of Mr. Sanders' statement prepared for presentation before the House Armed Services Real Estate Subcommittee hearings 10-11 June:

THE NAVY HAS SUBMITTED a proposal to the Congress to adjust its land holdings on Culebra. I would like to make a short statement now to put that proposal in proper perspective.

The first thing I would like to stress is the importance of Culebra to the Navy. Culebra is an essential part of the Atlantic Fleet Weapons Range, which provides important fleet training to the ships and aircraft of the U.S. Atlantic Fleet. The type of training done at the range cannot be conducted elsewhere in the Atlantic. There have been several studies to determine if there were alternatives to this range, and therefore to Culebra. The answer in each case was no. This judgment was based on the following criteria for such a weapons training area:

1. An area within which simultaneous operations can be conducted such as, amphibious operations, ship-to-shore gunfire, air operations and deep-water fleet training.

2. An area relatively free of commercial and non-participating aircraft and ships.

3. An area within a region of optimum weather conditions.

4. An area with favorable geography, oceanography, topography, and low population density.

5. An area that is preferably on U.S. territory.

6. An area contiguous to a Navy support activity.

Despite speculation to the contrary, there is no other place in the Atlantic area which meets these unique requirements where this training could be effectively conducted.

As you know, the Navy wanted to acquire the whole island in order to be able to train in an environment of greatest safety with most of the weapons now in the fleet and most of those we anticipate will be added to the inventory in the future. However, obtaining the whole island has proved to be infeasible. Therefore, we have proposed an adjustment of our land holdings on Culebra with two objectives in mind:

1. Permit the Navy to carry out its most essential training requirements—again in an environment of maximum safety.

2. Permit the people of Culebra to develop their economy as much as possible, consistent with the safe operation of the range.

Let me dwell for a moment on safety, because that concerns the second point I want to make.

Since 1936, Navy ships and aircraft have trained on and near Culebra. Nine Navymen were killed and one injured in 1946 when an aircraft mistakenly dropped bombs on a Navy observation post. Prior to 1936, when Culebra was used for Marine training, there was a boy reportedly killed accidentally when he allegedly played with a grenade left during the training. The Navy does not conduct aerial bombing on Culebra now. Marine operations are not conducted on Culebra now. Recently, there also have been reports of some Culebrans being injured prior to 1936 and one allegedly injured since 1936—but the Navy has neither knowledge of nor have any official claims been received regarding these alleged injuries.

Therefore, since 1936, we can frankly state that the record of naval training with regard to the safety of civilians on Culebra is excellent. The safety procedures in force are designed to make the range as safe as humanly possible. Further, these safety precautions are constantly under review to insure that they meet current conditions.

This level of safety cannot be guaranteed without some impact on the movement of people in and around the island of Culebra, but I can assure you the Navy will work diligently to reduce controls as much as possible consistent with safety. For instance, at some expense to training, we have shifted the Practice Aerial Mining Range from, immediately to the south of the town of Dewey to the vicinity of the small uninhabited island of Culebrita. This provides free sea access . . . .

Continued on page 27

# The Navy Fills In Some of the Blanks

THE NAVY has now officially divulged to The JOURNAL the results of its inquiry into: (1) the alleged deaths and injuries resulting from its decades-long shelling of Culebra targets; (2) a record of what Navy officials called "errant falls of shot" landing outside prescribed safety zones; and (3) the statistics of Atlantic Fleet usage of the Culebra targets. Details on the accuracy of firing were not revealed.

The Navy's comments on the list of alleged incidents of deaths or injuries are as follows:

(1) 1914—Isaac Espinosa lost his right arm in the explosion of a grenade (the Navy has no knowledge of that).

(2) 1935—Alberto Pena Garcia, a 15-year-old schoolboy, was killed when he banged a Marine grenade ("apparently true," the Navy says, "but there is no official record of it").

(3) 1935—Vincenzo Romero lost his right arm in another accident (also "apparently true," but no Navy record).

(4) 1946—Nine Navymen killed when an aircraft dropped its ordnance on the northwest cape O.P. painted the same color as the target (the Navy said it stopped using this northwest area as a target "about three years ago," with procedures instituted since the incident requiring positive, visual, confirmed identification of the targets prior to firing).

(5) 1958—Sixto Colon Robinson suffered partial loss of vision in his right eye when a group of children set fire to gunpowder they found on the beach (Navy confirmed and clarified this).

(6) 1968, April—A Jersey calf owned by Feliciano Rosario was killed by rocks kicked up by the landing of two non-explosive star shells during night illuminating exercises—the only claim (\$100) paid by the Navy (this incident was considered the result of "an improper operation of a computer aboard ship and possibly of the crew.")

(7) 1968, 14 June—A Navy pilot was killed when his A-4B on a firing run onto Agua Cay crashed into the water south of Yorba Cay northwest of Luis Pena Cay (the plane did not crash on that island as some allege, the Navy said; cause of the crash was not determined).

(8) 1968—The Navy reports "no record, no knowledge" of an incident in which a fishing vessel was hit by a shell sometime that year.

(9) 1969, 1 December—A bomb landed in Dewey Harbor that date, the Navy verifies, as the result of a release mechanism malfunction aboard a Marine aircraft returning from a target run on Aqua Cay (the missile was a Mark-76 25-lb smoke marker practice bomb, inert except for a shotgun-sized spotting charge; pilot turned right instead of left as instructed, CO of his squadron took appropriate disciplinary action).

(10) 1970—The San Juan yacht, La Vagabunda, owned by Carlos Vasquez, had smokepots dropped athwartships during five passes by an aircraft on a clear day while the vessel cruised amidst a flotilla of 14 others (the Navy says they interviewed Vasquez, who said he didn't report the incident because he was not upset, it was "unimportant" except to his on, who "wanted to gossip").

(11) 1970—Report of John Dinga, skin diver on the island, that 750-lb bombs landed intact in six to 10 feet of water just off Culebra's eastern shore (the Navy EOD officer at Roosevelt Roads Naval Station said Dinga refused to show divers where the bombs were).

(12) 1970—Two alleged mortar firings in April (Navy says firing on 19th did not take place, one on 22nd did, when three mortar rounds splashed in water near where children were swimming on the beach).

(13) 1970—John Dinga charged that a P-2 Neptune ASW patrol aircraft harassed him. The Navy is in the process of checking this out.

As a result of a directive to the Missile Range Facility by the Navy's former Safety Director and new Commander Caribbean Sea Frontier, RADM Norvell G. Ward, to report to him on all recorded incidents of misfires or wild shots on the bombing and gunfire support ranges, the Navy has determined that there have been since October 1965—six occasions of what one official called "errant falls of shot," as follows:

(1) On 13 October 1965, two five-inch projectiles impacted on the northeast face of Luis Pena Cay, fired by USS *Charles F. Adams* (destroyer) on a systems test.

(2) On the same day two more, from the same ship, fell outside the safety zone (the Navy doesn't know if they were explosive).

(3) On 19 October 1965, four five-inch projectiles impacted on the north face of Luis Pena Cay (because of systems difficulties) by *HMAS Perth*, an Australian destroyer purchased from the United States.

(4) On 5 November 1965, two five-inch projectiles impacted south of Aqua Cay by USS *Stickle* (an "overshoot"); all were outside safety zone outside of impact area.

(5) On 24 March 1969, USS *Fort Snelling* (an LST) fired two rapid-salvo three-inch round shells which landed on Luis Pena Cay, as a result of human error.

(6) On 18 June 1969, a strafing incident on the island's eastern end did occur; people in the area picked up a 20mm training round with no charge in it—it could have been either an overshoot or the result of rounds skipping in off the water.

## Statistics Classified

Navy officials told The JOURNAL that they could not provide "specific statistics on accuracy of the firings on the Culebra targets." Such statistics are classified since "they provide a specific indication of the readiness of the fleet."

Asked about the details of a Dahlgren Naval Weapons Lab study, which purportedly pointed up substantial inaccuracy on the part of some vessels using the range, Navy officials said that this was less a study of firing accuracy (where rounds land) than of ship safety-calibration equipment.

"Very nearly 100%" of the ships in the Atlantic Fleet fire at Culebra at some time during their two- to three-year, shipyard-to-shipyard training cycle, Navy officials told The JOURNAL.

They said that 90% of LANTFLT ships which at one time or another should engage in shore bombardment firing use the Culebra range. In 1969 170 ships out of over 225 affected by this requirement used the range.

About 5% of the ships use the Vieques range, shore fire bombardment teams use Bloodworth Island (uninhabited, in Chesapeake Bay), and a few ships use San Clemente Island in the Pacific on the way to Southeast Asia.

States—very populous areas not too far away, in some cases.

### Different Order of Magnitude

Richard Copaken, of the Washington law firm of Covington and Burling, which is representing the Culebrans, observed that when you "have naval gunnery fire and bombing and strafing in close proximity to this very small area it is a different order of magnitude of difficulty than larger spread-out areas of the U.S. It is the proximity that I think represents the grave danger and the sense of fear of the Culebrans."

Bennett conceded that the accidents that have occurred "can give rise to this emotional feeling that maybe if it was a Navy officer's child, it wouldn't happen.

"I can understand when you have only small population it becomes more disturbing psychologically because you have nothing else to divert you; there is nothing else happening of any great disturbing nature."

Bennett questioned the Navy closely on the matter of alternatives (see also "If Not Culebra, What?"), and whether floating targets could be used, or rake stations on ships.

Bennett raised the possibility at one point of putting rake stations on ships offshore "which would be trained therefore in operations of this type to their advantage. . . . If we get into combat off some foreign shore we are not going to have all kinds of OP stations on the land," he observed.

"We are not training on a foreign shore," Admiral Moore objected.

### Name of Game Is Combat Train

"No, I am talking about combat," Bennett rejoined. "After all, the whole thing is to train for combat. So if we get off a foreign nation that we are belligerent with, we are not going to have any OPs sitting around there on land, and so why wouldn't it be a good thing to train people in observing this type of thing?"

"We do train shore gunfire control parties," Captain George W. Gaienne replied. "We also have aircraft spotters to assist. But in the air-to-ground ordnance, observing from a ship introduces another variable, the position of the ship with respect to the target, which makes your plotting of the fall much less precise."

"Well," Bennett answered, "since that is exactly what we need in time of combat, I am not real sold on that sentence in the Admiral's statement."

Here are excerpts from the statements made by the Culebrans or on their behalf:

JORGE L. CORDOVA, Resident Commissioner in Washington: "Either Culebra's inhabitants are evacuated so that the Navy can use it for its weapons range, or the Navy foregoes using Culebra as a target area. . . . And even the Navy has now been convinced that it should not insist on the evacuation of Culebra.

"The Atlantic Fleet needs a target. It needs some place where intensive firing can be conducted seven days a week. . . . This place is clearly not Martha's Vineyard, nor Nantucket, nor Sea Island. It is equally clear to me that it must not be Culebra."

FERNANDO CIARDON, Secretary of State of the Commonwealth of Puerto Rico: "If, in the opinion of this Committee—which has access to information not available to us—the security of our nation were at stake if the Navy were to eliminate or curtail its present activities in Culebra and move all or the more objectionable targets somewhere else, then our government would reassess its position, since we feel, as United States citizens, that national defense should have top priority. If, on the other hand, it is proven to the satisfaction of this Committee that the requirements of national defense can be satisfied otherwise, then our adminis-

armed forces JOURNAL/20 June 1970

of Puerto Rico: "This prestigious journal [Armed Forces JOURNAL, 23/26 May] made the comment, 'Our hearts are with the United States Navy, but not about Culebra.' This is the basic position of almost everyone who will address this committee."

DR. HERNAN PADILA, Majority Leader of the Puerto Rican House of Representatives: "For more than thirty years the people of Culebra have borne more than their share of the burden of national defense than that borne by American citizens elsewhere."

ANASTASIO SOTO, fisherman, President of the Committee for the Rescue of Culebra: "If this [the Navy's plan] happens, a community of American citizens living in their country in time of peace will be treated like enemies in time of war."

J. GONZALEZ, largest businessman on the island: "Since the Navy announced its plan to take more land, business has decreased because even fewer people come to Culebra and building has stopped entirely."

REPRESENTATIVE BENNY FRANKIE CEREZO, member of the House of Representatives of Puerto Rico: "Why has such a small island raised such a big issue? . . . Culebra is a symbol of the fight of the humble masses against the military-industrial complex. . . . The Culebra issue is an American one. . . . We are not Vietnamese. We are not Cambodians. We are American citizens. The design of Pentagonism in Culebra cannot triumph."

JACKIE SANTOS, counsel for the Committee for the Rescue of Culebra: "The Navy should make clear to Congress and to the nation its ultimate goals in Culebra. To lease under present conditions is the same as taking the land for the price of a leasehold."

RUBEN BERRIOS MARTINEZ, President of the Puerto Rican Independence Party and Professor of International Law in the University Law School, Rio Piedras, Puerto Rico: "It is impossible to discuss the Culebra affair without understanding and recognizing the colonial status of Puerto Rico . . . the impotence of the Puerto Rican government to deal with the United States Navy from a position of equality."

SIXTO COLON ROBINSON, injured by a gunpowder accident in 1958: "Many Culebrans with potential suits against the Navy, never file any claims because they do not know their rights, nor do they know how to go about filing such claims, and, finally, because there is a belief that the Navy never loses."

CARMELO FELICIANO, grade school teacher on the island: "Unlike children in the mainland of Puerto Rico and in the United States, the students in Culebra must attend school in a state of fear and anxiety that does not permit them to function in a normal way."

CLARO FELICIANO, farmer: "We live in constant danger of being killed while working in our farms. There are many unexploded bombs and shells in private farms."

RAMON FELICIANO, Mayor of Culebra: "The Navy must leave Culebra in peace and abandon its intention of continuing to use us as a target so that our Puerto Rican people and the American nation can proclaim that our country is indeed the true protector of democracy."

Joseph Grimes, Special Assistant to SecNav in charge of Culebra, noted at the start of his statement that "Culebra is a political issue in the Commonwealth of Puerto Rico—and one of delicate sensitivity."

The excerpts from the statements above attest to a contrary conclusion, as did Commissioner Cordova, who told Grimes. "It was perhaps an issue. It is no longer an issue. The Navy has been quite successful in uniting Puerto Rico, which was otherwise divided and is still divided politically on many other issues, but not on Culebra."



#### ENCROACHING FOOTPRINTS?—

The Navy's proposed expansion nearly doubles the size of the existing safety zone on the eastern end of Culebra to accommodate the firing of the Walleye missile on Culebrita. If such a sizeable chunk of the island is needed to expand the safety zone for this missile, other more sophisticated missiles which the Navy says it might (but doesn't have any current plans to) fire against Culebrita would presumably require "footprints" so large that further habitation of the island would be ruled out. The JOURNAL suggests that if the larger area is going to be needed for these follow-on missiles, why not secure it elsewhere, now, and then also use it for Walleye? Or why acquire so much more land now, if only the existing safety zone area will be needed for presently planned firings?

#### SANDERS SPEAKS

*Continued from page 23*

It also provides a more direct ferry route to Culebra. Further, I would like to announce that the Navy has this week established a free access sealane to Dewey and the harbor through which boats may pass without checking with the Navy, which was a requirement until this week. Additional relaxation of controls consistent with safety may be possible and the Navy will welcome suggestions from the people of Culebra.

The third point I would like to make is that the Navy proposal does facilitate some new development on Culebra. We want to release 680 acres of Navy land, including ten miles of coast line near Dewey where most Culebrans live and where the best protected harbor is located. This land also includes the airport, from which regularly scheduled flights and other civilian aircraft operate.

The fourth point I want to stress is that the Navy is by necessity opposed to any economic or tourist development that will significantly increase the risk to civilians. We cannot emphasize this safety aspect too strongly. For this reason the Navy is opposed to projects for new vacation homes and marinas on the eastern end of Culebra. Some of the

close to existing and proposed targets on Culebrita—would seriously degrade safety.

This Navy proposal includes compensating the landowners in this area by leasing non-habitation easements on this land to establish safety zones, while at the same time, allowing the citizens of Culebra continued use of this land for farming and grazing. We want to do this not because we are opposed to development, but because we wish to conduct

tailed justification for the Navy's need for these easements on Culebra.

#### ADMIRAL MOORE SPEAKS

*Continued from page 24*

to determine the essential characteristics of such a complex. To expand somewhat on the criteria presented earlier:

- It must have adjacent deep water to permit individual ship and coordinated fleet maneuvers.

#### ANNOUNCEMENT

#### TO MEMBERS OF THE MILITARY SERVICE AND THEIR FAMILIES

#### SALE OF COMMON STOCK

SHAMROCK VAN LINES, INC.  
Dallas, Texas

An offering of securities has been approved by the Interstate Commerce Commission under I.C.C. Finance Docket No. 26156 dated May 20, 1970. The offering is being made by prospectus only.

The Commission's Order permits Shamrock to sell 2,178,844 shares of common stock to the public. Members of the Military Service and their families can receive a copy of this prospectus, together with a copy of the printed order of the Interstate Commerce Commission, by sending in the coupon below.

Some service members may find it convenient to attend a special meeting at the airport Ramada Inn in Dallas, June 27th, at 10:00 AM and learn the complete details regarding this issue. All present stockholders of record will be in attendance. Those desiring to attend can call Shamrock collect, (214) 253-3671 and reservations will be made.

Shamrock Van Lines is a Texas based household goods carrier presently operating nationally and overseas.

Shamrock Van Lines, Inc.  
International Headquarters:  
P. O. Box 5447 - Dallas, Texas

Gentlemen:

Please send me a copy of your prospectus together with the printed I.C.C. Approval Order.

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

As one element of overall training, each year approximately 100 cruiser-destroyer type ships and 30 amphibious ships will undergo gunfire support training on the range.

Annually, each of our six Atlantic fleet attack carriers will conduct intensive combat training exercises on the range. As an example, *John F. Kennedy* is scheduled for ship and air wing training on the range at the end of this month, and again in the early fall.

The annual major fleet exercise called "Springboard" involves combined operations of about 50 U.S., and a number of allied Navy ships in the range complex. These naval units must be staggered on the range over a period of several months to ease congestion of target facilities.

From an initial five surface-to-air missiles fired in 1959, the number grew to 236 in 1966, and 186 were fired in the first half of the year.

During Fiscal Year 1969—exclusive of missile firings—a total of 6,966 hours of range events were conducted in support of fleet units undergoing weapons training. This activity included 4,802 aircraft sorties on targets in the Culebra complex, and firing of 555 practice weapons on the underwater range.

In the inner range portion of the Atlantic Fleet Weapons Range complex, the island and cays of Culebra provide a broad array of targets for air-to-ground and ship-to-shore weapons delivery. This target array is divided into two target sub-areas called the East and West Ranges. The northwest peninsula of Culebra Island contains the only targets on the island proper; and assortment of simulated vehicles, tanks and markers along the Northern slopes. While these targets have been used in the past for air-to-ground inert or non-explosive—practice weapons, this is now used exclusively for ship-to-shore gunnery practice. The remainder of the targets in the West Range are located on outer cays—or islets—safely removed from the island of Culebra. All East Range targets are similarly located on cays, or on the small island of Culebrita about two-thirds of a mile from the sparsely habited eastern end of Culebra. These outer cay targets provide air-to-ground training in bomb, rocket, strafing missile and practice mine deliver.

In each of these range areas, a network of instrumented observation points is situated to permit precise measurement of the accuracy of each weapons impact. Without such vantage points or rake stations and careful recording of weapons impact accuracy, it is not possible to derive an accurate measure of weapon delivery skill.

armed forces JOURNAL/20 June 1970

ing area and marine maneuver area on its eastern end. This target group is also referred to as an impact area; it is composed of assorted vehicles and emplacements that present a realistic combat scenario. This Vieques impact area is the only other air-to-ground target facility in the inner range of the Atlantic Fleet Weapons Range. The absence of safe observation, or rake stations precludes measurement of weapons impact in terms other than direct hit or miss. The impact area on Vieques also is designed primarily for advanced, coordinated training of the Navy-Marine amphibious assault team.

The foregoing description of the target facilities on Culebra and Vieques has been provided to permit an understanding of the real value of Culebra and its outer cays in the overall weapons range complex. Although the installations in the Culebra complex represent only a small fraction of the total sum invested in the range, it would be a serious error to measure Culebra's importance to the Navy on this basis. While expensive instrumentation, telemetry, command and control, and support facilities are essential to a modern weapons range, the final measure of training proficiency is the accuracy of weapons delivery at the target. There is no other practicable means to evaluate the full readiness of the weapons system—man and machine. Without these aim points—these outlying raked targets—the major investment at Roosevelt Roads would have little real value in training attack pilots and gunnery crews for combat.

It is important also to recognize that the geographical relationship of the land areas in the Culebra complex is vitally important. This is essential both for effective range operations and general range safety. It is necessary for continuing surveillance of air and sea traffic, for telemetry in missile firings, for economy of sea and air space usage, for effective exercise of centralized command and control—including communications, for effective logistic support of training sites, and for safe weapons employment.

As a final point, I would like to emphasize the importance of concurrent target activity. With three air-to-ground target sub-areas—the East and West Ranges at Culebra and the impact area on Vieques—it is possible to conduct at least three simultaneous weapons delivery operations. The ability to conduct these concurrent operations without mutual interference permits the conduct of major, combined fleet training exercises and also accommodates peak training loads for individual units. The alternative to these concurrent activities is much wasted time—and money—for

but rather a fundamental requirement for coordinated fleet-level operations the final advanced training level described earlier.

In summation: 1) The Culebra target array is entirely unique in its ability to provide the instrumented—air-to-ground and ship-to-shore target service essential to effective operation of the fleet. 2) There is no viable alternative to the island and cays of Culebra in fulfilling this essential role. The only true alternative is a degradation in the training readiness of the Atlantic Fleet.

Turning to the immediate issue at hand—the new proposal for final settlement of land apportionment on Culebra—it has been indicated that the Navy's requirement for the safety zone adjacent to the East Range is based solely on training with the Walleye missile. This is not the case. If the precision missile were never fired on the proposed target on Culebrita, there would still be a requirement to preclude housing development in this area in light of present target activity. Up to the present, this eastern area has been relatively underdeveloped with several infrequently occupied dwellings in the area. This arrangement has been acceptable from the standpoint of safety hazard to people. Now, however, with the prospect of increased development and the prospect of population constantly present during range operation on targets only a mile to seaward of the coast, it becomes timely to firm up the land arrangements to ensure safety.

As a related matter, Walleye is simply a progressive step in a family of precision, air-to-ground, short range missiles and should be properly segregated from the longer range stand-off missiles. The successors to Walleye are expected to have the same, or better precision and delivery characteristics—or footprints. The use of Culebrita for this family of weapons would be of considerable training advantage to the Navy—but this does not comprise the sole case for the Eastern safety area.

In closing I would like to say that it is the Navy's desire—to accommodate the needs of the Culebra citizens in any way we can consistent with the important training job the Navy is doing in their area. In my recent visit to Culebra, I was able to view conditions in the area first hand. While I do not pretend to have exhausted all areas of information about the island and its people, I feel confident that a balance can be reached between the legitimate interest of the Culebra populace and the Navy's very fundamental need for training. I believe the current proposal before this Committee is consistent with such a balance.

NEW AMMO SAID QUIET, NON-EXPLOSIVE

# 'Puff--Round' To Be Used On Culebra

The U.S. Navy has adopted a newly developed "puff-round" for all its target practice on Culebra which will eliminate the noise and explosion of the standard high explosive ordinance formerly used.

In making the announcement Thursday, Rear Adm. Norvell G. Ward, Caribbean Sea Frontier commander in San Juan, said in a statement that the first ship to use the new training ammunition on the ranges will be the U.S. destroyer Charles P. Cecil Monday. It will be the first ship to fire on the Culebran ranges in 1972.

A Navy spokesman said the switch to the non-explosive ammunition was the outgrowth of the agreement signed a year ago between Navy Secretary John H. Chafee, Gov. Ferre, Senate President Rafael

Hernandez Colon and Culebra Mayor Ramon Feliciano. The agreement was designed to curtail the Navy's use of Culebra.

The new "puff-round" projectile was designed especially for the Culebra targets by the Navy in accordance with the early 1971 Department of Defense study on Culebra Ward said.

The 55-pound practice shell is more expensive than the high-explosive round and there is not explosive charge in it, which could produce shrapnel or other fragmentation, according to the admiral. Additionally, it is virtually a silent projectile, creating no loud explosive "bang" on impact as compared to the high-explosive ordinance. Upon impact or by timed release, the new shell produces

a rapidly vanishing white smoke.

Wednesday, the Navy announced it had taken steps to declare 430 acres on Culebra excess in compliance with the terms of last year's agreement.

The Navy has submitted to the U.S. House and Senate Armed Services Committees excess property statements covering the island of Culebrita, adjacent cays and about two-thirds of Culebra's shoreline.

Although it was generally believed here that the land was to be returned to Culebra, it was reported that the recommendation would be that the excess land go to the Interior Department.

The agreement did not specifically state who would receive the property.

# Life as usual on Culebra

By JOSE Mel Wrenn

A recent tour of the Naval facility on Culebra evidenced little strain in the traditionally cordial relations between the Culebrans and the sailors who work on the island.

The thirty Navymen who man the Atlantic Fleet Weapons Range observation post on the island work in 6 spotting point located more than 1,300 yards from the 22 targets. Ships are normally scheduled on the range from dawn until late at night - sometimes until midnight. The actual operations usually last about six hours. Time not spent evaluating gunfire is spent on field days and other typically Navy chores.

The crew's quarters include a well stocked reading room, a pool room, and air-conditioned lounge. A miniature basketball court and movie theater can be found outside, and cold beer and fuel for midnight smokers is always a few steps away. If it all sounds like a bad trade in light of the island's relative isolation, consider the way ENS John D. Mudaly ends his day "dreaming of the \$2,000 I've saved since I've been here."

Trucks make the trip into the island's largest town, Dewey, several times a day during the week. The men on Culebra remarked that their reception is as warm as ever - especially when looking for a softball opponent! Flights are available over the weekend



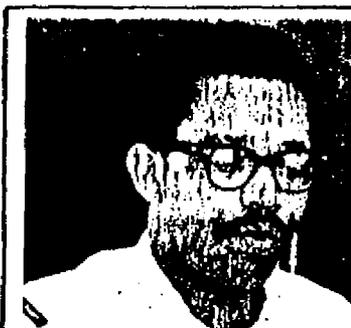
Aerial view of Dewey, Culebra's main town.

to Saint Thomas and San Juan, but the men on Culebra say they find it hard to match anywhere the meals prepared by their chef, Hulio. The men gladly surrender three dollars a day from their six-dollar per diem allowance to cover Hulio's services. His dinner is the high point of any visit to the Naval facility.

The relations between the Navymen and Culebrans are bolstered by the cooperative posture the Navy has maintained toward the Culebrans ever since President Roosevelt's Executive Order in 1948 declared that the island's unique potential as a Naval exercise site made it vital to the nation's security. Charged

with conducting its operations justly and safely, Naval policy has always been to post prominently and regularly the range schedules. Local fishermen are promptly reimbursed for any damage to their lobster pots and nets, and the availability of grazing land on Naval property has always been painstakingly negotiated with the island cattlemen's association.

The island's dispensary is often supplied with medical stuffs obtained through Handclasp channels. Equipment for the school science laboratory has been donated in the past by various Naval sources. Excess sand, gravel, and a variety of construction material has been donated to assist in construction of the church and other needy projects.



IF YOU WORK AT AFWR, you should know this man. Mel Wrenn, Journalist on the COMAFWR Public Affairs Staff, is the MIRA QUE correspondent at the range headquarters. Take advantage of him.



**SMART MOVE!!!**

1tjg Robert Cornie, Naval Station Disbursing Officer, discusses Savings Bonds in next week's MQP.

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX I

INTERVIEWS

APPENDIX I

INTERVIEWS

Table of Contents

- I-1. Interview of Mr. Anastacio Soto.
- I-2. Interview of Mr. Abraham Pena.
- I-3. Interview of LT Robinson.
- I-4. Interview of Mr. Amaro.
- I-5. Interview of Mr. Luis Molero.
- I-6. Interview of Mr. Ricardo Pena.
- I-7. Interview of Mr. Ramon Feliciano.
- I-8. Interview of Mr. Henry Morales.
- I-9. Interview of Mr. Gene Thomas.
- I-10. Interview of Ms. Teresa Tallevast.
- I-11. FONECON with Ms. Nadeen Decicco

<b>CONVERSATION RECORD</b>		TIME 8:00 AM	DATE Sep 30, 1994
TYPE			
<input checked="" type="checkbox"/> VISIT		<input type="checkbox"/> CONFERENCE	<input type="checkbox"/> TELEPHONE
			INCOMING
			OUTGOING
NAME OF PERSON CONTACTED Mr. Anastacio Soto Ayala	ORGANIZATION Mayor of Culebra	TELEPHONE NO. (809) 742-0413	
SUBJECT OEW on Culebra			

SUMMARY: Mr. Soto was interviewed in his office by Mr. Plante, Mr. Gillett, and Mr. Luis Molero. The interview was conducted primarily in Spanish with Mr. Molero translating. Mr. Soto appeared to be 50-55 years old.

After we explained the purpose of our visit, the mayor told us what he knew about OEW contamination. He said there is ordnance almost everywhere, especially in the keys, and provided some specific locations. He said the Navy fired torpedos at the north side of Culebra between Playa Brava and Playa Larga. He also said they dropped practice bombs south of Playa Sardinias until 1944.

The mayor added that Cayo Lobito was not a target because of a navigation light there, and he thought that ammo was never stored at the Navy base. He did not think Cayo Norte was ever used as a target. Mr. Soto also said that planes from the airfield did not carry bombs.

Mr. Soto said there were many times when the bombs missed their targets, and mentioned the incident about 20 years ago when fragments came down next to city hall. He also noted the death of a local child who had been playing with recovered ammunition. Mr. Soto told of the incident where several Navy personnel were killed about 20 years ago at the Punta Flamenco OP by a bomb dropped on the OP. He said the OP was painted white, the same as the target, and the pilot confused the OP with the target.

**ACTION REQUIRED**

None

NAME OF PERSON DOCUMENTING COVERSATION Ronald Plante	ORGANIZATION CENCR-ED-DN	TELEPHONE NUMBER (309) 794-5806
SIGNATURE <i>Ronald Plante</i>	TITLE QASAS	DATE 10/12/94

CONVERSATION RECORD		TIME	DATE
TYPE			
<input checked="" type="checkbox"/> VISIT		<input type="checkbox"/> CONFERENCE	<input type="checkbox"/> TELEPHONE
			INCOMING
			OUTGOING
NAME OF PERSON CONTACTED		ORGANIZATION	TELEPHONE NO.
SUBJECT OEW on Culebra			

Continuation of interview with Mr. Abraham Pena

After the interview, Mr. Pena met the team out at Flamenco Pensinsula and took us to a recently discovered item in a rocky area on the beach 3/4 mile north of the campground in a area not generally frquented by the public. This item appeared to be some type of 12" projectile with a possible 6" fragment nearby, though we could not make a positive identification. We advised DNR not to handle the item and to call EOD.

ACTION REQUIRED		
None		
NAME OF PERSON DOCUMENTING COVERSATON	ORGANIZATION	TELEPHONE NUMBER
Ronald Plante	CENCR-ED-DN	(309) 794-5806
SIGNATURE	TITLE	DATE
<i>Ronald Plante</i>	QASAS	10/12/94

<b>CONVERSATION RECORD</b>		TIME 10:00 AM	DATE Sep 30, 1994
TYPE			
<input checked="" type="checkbox"/> VISIT		<input type="checkbox"/> CONFERENCE	<input type="checkbox"/> TELEPHONE
			INCOMING
			OUTGOING
NAME OF PERSON CONTACTED Mr. Abraham Pena Nieves	ORGANIZATION DNR Chief	TELEPHONE NO. (809) 742-3880	
SUBJECT OEW on Culebra			

Summary: Mr. Abraham Pena was interviewed in his office by Mr. Plante, Mr. Gillett, and Mr. Luis Molero. The interview was conducted primarily in Spanish with Mr. Molero translating. Mr. Pena appeared to be about 50 years old. He has worked for DNR about 17 years and prior to that worked as a guard for the Navy.

Mr. Pena told us that DNR owns 936 acres of former Navy property and gave us a map shown the areas they own. He said the only OEW on DNR property is on the Flamenco Peninsula where they run a campground and a beach. He said that campers sometimes collect ordnance and turn it over to DNR personnel, who periodically call EOD at Roosevelt Roads.

He said there is OEW on the keys, but these are not DNR property. He did not think that Cayo Norte was ever a target, and he had heard that torpedos were fired at Marc Point. Mr. Pena said that soldiers had fired small arms all over Culebra and knew of a rifle range at the airport. He had also heard that soldiers had left some small arms in the woods.

Although the DNR owns the former Navy base and has their main office there, Mr. Pena was unaware of any munitions dumped there. There are two dump areas that were used by the Navy until they left about 20 years ago. DNR uses an unfuzed 6" projectile from Flamenco Peninsula as a doorstep (he says it's empty).

Mr. Pena said that his uncle was killed many years ago after putting a bullet in a fire. He also told of an incident where several sailors were killed at the Punta Flamenco OP by a stray bomb. He added that a bomb fell near his house in 1968 or 1969.

NAME OF PERSON DOCUMENTING COVERSATION Ronald Plante	ORGANIZATION CENCR-ED-DN	TELEPHONE NUMBER (309) 794-5806
SIGNATURE <i>R. Plante</i>	TITLE QASAS	DATE 10/12/94

<b>CONVERSATION RECORD</b>		TIME 4:00 PM	DATE Sep 30, 1994
TYPE			
<input checked="" type="checkbox"/> VISIT		<input type="checkbox"/> CONFERENCE	<input type="checkbox"/> TELEPHONE <input type="checkbox"/> INCOMING <input type="checkbox"/> OUTGOING
NAME OF PERSON CONTACTED LT Robinson	ORGANIZATION Culebra Police Chief	TELEPHONE NO. (809) 742-3501	
SUBJECT OEW on Culebra			

Summary: This interview was conducted primarily in English by Mr. Plante, Mr. Gillette, and Mr. Molero. LT Robinson appeared to be about 45 years old.

LT Robinson said he remembered when the Navy used to bomb Flamenco Peninsula, and said that he used to find unexploded bombs on Flamenco Beach. He thought that most of the ordnance would be found west of Culebra, and was not aware of OEW on the main island other than Flamenco Peninsula.

He did not have any records of recovered bombs, but he did say that someone did a sweep of the beach with metal detectors. He did not know who did this or when.

Lt Robinson said that ships from other countries, including Canada and Argentina, used to bomb Flamenco Peninsula. He had heard of an incident where the Navy mistakenly bombed the OP and killed several sailors. He thought they were buried in the local cemetery. He also related the story of bomb fragments nearly hitting the city hall many years ago.

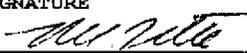
ACTION REQUIRED None		
NAME OF PERSON DOCUMENTING CONVERSATION Ronald Plante	ORGANIZATION CENCR-ED-DN	TELEPHONE NUMBER (309) 794-5806
SIGNATURE <i>Ronald Plante</i>	TITLE QASAS	DATE 10/12/94

<b>CONVERSATION RECORD</b>		<b>TIME</b> 4:30 PM	<b>DATE</b> Sep 30, 1994
<b>TYPE</b>			
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		<input type="checkbox"/> TELEPHONE <input type="checkbox"/> INCOMING <input type="checkbox"/> OUTGOING	
<b>NAME OF PERSON CONTACTED</b> Mr. Amaro		<b>ORGANIZATION</b> Culebra Firefighter	<b>TELEPHONE NO.</b> (809) 742-3530
<b>SUBJECT</b> OEW on Culebra			

Summary: This interview was conducted in Spanish, with Mr. Molero providing translating services. Mr. Amaro appeared to be about 30 years old.

Mr. Amaro stated that he has seen huge projectiles in the water on the west side of the peninsula southwest of Flamenco Beach. He admitted to recovering some projectiles and chipping off the rotating band to sell for scrap.

He also said he has found clips of live bullets in the woods near the airport and thought that there may have been a rifle range there at one time.

<b>ACTION REQUIRED</b> None		
<b>NAME OF PERSON DOCUMENTING COVEPSATION</b> Ronald Plante	<b>ORGANIZATION</b> CENCR-ED-DN	<b>TELEPHONE NUMBER</b> (309) 794-5806
<b>SIGNATURE</b> 	<b>TITLE</b> QASAS	<b>DATE</b> 10/12/94

<b>CONVERSATION RECORD</b>		TIME 7:00 PM	DATE Sep 30, 1994
TYPE			
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			<input type="checkbox"/> INCOMING
			<input type="checkbox"/> OUTGOING
NAME OF PERSON CONTACTED Mr. Luis Molero	ORGANIZATION Recreational Boater	TELEPHONE NO. (809) 729-6901	
SUBJECT OEW on Culebra			

Summary: Mr. Molero stated that he owns a 23' cabin cruiser which he docks at Fajardo. He said he has visited Culebra 7 or 8 times a year ever since 1978. He does scuba diving and snorkeling from his boat.

In his trips to Culebra, he has anchored virtually everywhere on the west, south, and east sides. Mr. Molero has observed the largest ordnance items, projectiles about 12" or 16" in diameter, in the water around Cayo Raton, Cayo Yerba, and Cayo Agua. He has also seen tubular items about 3' long and 5-6" in diameter in the shallow water just off the north beach of Cayo de Luis Pena.

ACTION REQUIRED		
None		
NAME OF PERSON DOCUMENTING COVERSATION Ronald Plante	ORGANIZATION CENCR-ED-DN	TELEPHONE NUMBER (309) 794-5806
SIGNATURE <i>R Plante</i>	TITLE QASAS	DATE 10/12/99

<b>CONVERSATION RECORD</b>		<b>TIME</b>	<b>DATE</b>
<b>TYPE</b>			
<input checked="" type="checkbox"/> VISIT		<input type="checkbox"/> CONFERENCE	<input type="checkbox"/> TELEPHONE
			INCOMING
			OUTGOING
<b>NAME OF PERSON CONTACTED</b>	<b>ORGANIZATION</b>	<b>TELEPHONE NO.</b>	
<b>SUBJECT</b> OEW on Culebra			

Mr. Pena took us to the eastern side of the airport, where he said there are remnants of earthen berms and concrete walls which the Marines used as targets for a rifle range. He did not recall when they were torn down. He described targets that were raised up and down and said they fired rifles and pistols only. Mr. Pena was unaware of any other usage of this range or any ordnance found there. Because of the dense vegetation, we were unable to look for the rifle range.

Our next stop was Flamenco Peninsula, where Mr. Pena works for DNR. He said that Navy ships and airplanes bombed this area and offered to take us to a small collection of 3/4 "bombs" up in the hills. On our way up the hill, we observed a .50 cal bullet, some fragments, a large crater, one of the target tanks, and a possible rocket motor partially buried on the side of the trail. We turned back before reaching the collection of "bombs".

Mr. Pena told us of the incident at the Flamenco Point OP where 7 sailors were killed by a misdirected aerial bomb. He said that to the best of his knowledge, the only locations on Culebra Island with ordnance are Flamenco Peninsula and the mortar range.

**ACTION REQUIRED**  
None

<b>NAME OF PERSON DOCUMENTING CONVERSATION</b>	<b>ORGANIZATION</b>	<b>TELEPHONE NUMBER</b>
Ronald Plante	CENCR-ED-DN	(309) 794-5806
<b>SIGNATURE</b>	<b>TITLE</b>	<b>DATE</b>
	QASAS	

<b>CONVERSATION RECORD</b>	TIME 10:00 AM	DATE Sep 30, 1994
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TYPE		
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		INCOMING
		OUTGOING
NAME OF PERSON CONTACTED Mr. Ricardo Pena Garcia	ORGANIZATION DNR	TELEPHONE NO. (809) 742-3880 W 3193 H

SUBJECT OEW on Culebra

Summary: This interview was conducted in Spanish, with Luis Molero providing translation services.

Mr. Pena said that he is 77 years old, and remembers visiting the soldiers at the Navy base (current DNR & FWS offices) when he was a child. He showed us several of the structures that were used for ammunition storage. Mr. Pena said they were used to store small arms and projectiles that the naval infantry fired on the range in the 1920s.

Mr. Pena told us about the death of his younger brother Alberto in about 1935. Mr. Pena said he had been out on the range near their home collecting unexploded projectiles and brought some of them home. Alberto (age 9) was playing with two projectiles, knocking them together, when they exploded and killed him. Mr. Pena described an item which may have been a 37mm to 75mm projectile.

He then took us out to the range northeast of the Navy base. The first stop was the firing point located just off the concrete road (18° 18' 56" N, 65° 16' 40" W). We then drove off the road toward the impact area near Cerro Balcon. Mr. Pena took us up the hill and showed us a bush where he had buried some unexploded projectiles (18° 18' 56" N, 65° 16' 3" W). He also took us to the adjacent impact area. We found the base of a mortar round, and Mr. Pena said he has seen others. He said the Marines fired at silhouette targets, and there was a big blast and smoke when they hit. Occasionally rounds would go over the hill and land near his residence. The area is now used for cattle grazing, and Mr. Pena said he has never heard of cattle being killed from unexploded rounds.

NAME OF PERSON DOCUMENTING CONVERSATION Ronald Plante	ORGANIZATION CENCR-ED-DN	TELEPHONE NUMBER (309) 794-5806
SIGNATURE <i>Ronald Plante</i>	TITLE QASAS	DATE 10-12-94

<b>CONVERSATION RECORD</b>		TIME 5:00 PM	DATE Oct 1, 1994
TYPE			
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NAME OF PERSON CONTACTED Mr. Ramon Feliciano	ORGANIZATION Former Culebra Mayor	TELEPHONE NO. (809) 742-3551	
SUBJECT OEW on Culebra			

Summary: This interview was conducted in both Spanish and English. Luis Molero provided translation service.

Mr. Feliciano stated that he used to be the Mayor. He said he was born on the Flamenco Peninsula in 1923, but his family was kicked out in 1937 one year after the Navy began using it as a target range for ship and aerial bombardment.

He said that most of the ordnance can be found west of Flamenco Peninsula, and showed us some photos of large projectiles in the water. He said German and other foreign ships used the area for a range. Mr. Feliciano told us that most of the aerial ordnance was dropped on the eastern keys, adding that planes fired the Walleye on Culebrita and Cayo de Agua. He said there was a moving target for aircraft on Cayo Lobo and there was never any ordnance dropped on Cayo Norte.

Mr. Feliciano said that the Navy fired torpedos at Marc Point, and the OP at Flamenco Point fired mortars as spotting rounds toward Flamenco Peninsula. He said there is OEW on Flamenco Peninsula and the surrounding keys, and nothing elsewhere on Culebra Island. He added that the Marines left ammo all over the island in the 1930s, and said they fired at concrete targets at the airfield.

He said that a boy was killed in 1936 playing with a grenade, and told of a man losing his arm and a boy losing one eye. He also said a bomb fragment hit near city hall in about 1959. He related the story of how 9 sailors were killed at the OP in about 1944 when a pilot from Europe mistook the OP for the target.

NAME OF PERSON DOCUMENTING CONVERSATION Ronald Plante	ORGANIZATION CENCR-ED-DN	TELEPHONE NUMBER (309) 794-5806
SIGNATURE <i>R Plante</i>	TITLE QASAS	DATE 10/12/94

<b>CONVERSATION RECORD</b>		<b>TIME</b> 8AM -5PM	<b>DATE</b> Oct 2 & 3, 1994
<b>TYPE</b>			
<input checked="" type="checkbox"/> VISIT		<input type="checkbox"/> CONFERENCE	<input type="checkbox"/> TELEPHONE <input type="checkbox"/> INCOMING <input type="checkbox"/> OUTGOING
<b>NAME OF PERSON CONTACTED</b> Mr. Henry Morales	<b>ORGANIZATION</b> Fish & Wildlife Service	<b>TELEPHONE NO.</b> (809) 742-0115	
<b>SUBJECT</b> OEW on Culebra			

Summary: Mr. Morales served as our tour guide and boat captain during the two days we visited the remote keys. We also saw him on other visit to the Fish and Wildlife Office. He said he was 50 years old and remembered watching bombing as a child. Henry added that he served in the Army in Viet Nam from 1966 to 1967.

Henry was certain no ordnance was dropped on Cayo Norte or Cayo Lobito, and thought that Cayo Sombrerito and Cayo Luis Pena were not targets. He said the heaviest bombardment was on Flamenco Peninsula, and he has seen numerous bombs on the FWS property there.

On the western side of Culebrita, he showed us 5/6 metal posts protruding about one foot out of the water. He said those were used as mounts for strafing targets for aircraft.

<b>NAME OF PERSON DOCUMENTING COVERSATION</b> Ronald Plante	<b>ORGANIZATION</b> CENCR-ED-DN	<b>TELEPHONE NUMBER</b> (309) 794-5806
<b>SIGNATURE</b> <i>RP</i>	<b>TITLE</b> QASAS	<b>DATE</b> 10/12/94

---

beach of Cayo de Luis Pena, and Carlos Rosario Beach off Flamenco Peninsula just north of Punta Tamarindo Grande. Mr. Thomas felt these should be the first priority for an underwater cleanup.

Mr. Thomas added that the abandoned wind generator tower near the OP was never a Navy structure. He said it was some kind of NASA project not related to the Navy.

---

ACTION REQUIRED  
None

NAME OF PERSON DOCUMENTING COVERSATION	ORGANIZATION	TELEPHONE NUMBER
Ronald Plante	CENCR-ED-DN	(309) 794-5806
SIGNATURE	TITLE	DATE
<i>Ronald Plante</i>	QASAS	10/12/94

<b>CONVERSATION RECORD</b>		TIME 7:00 PM	DATE Oct 4, 1994
TYPE			
<input checked="" type="checkbox"/> VISIT		<input type="checkbox"/> CONFERENCE	<input type="checkbox"/> TELEPHONE
			<input type="checkbox"/> INCOMING
			<input type="checkbox"/> OUTGOING
NAME OF PERSON CONTACTED Mr. Gene Thomas	ORGANIZATION Scuba instructor	TELEPHONE NO. (809) 742-0566 W 742-3555 H	
SUBJECT OEW on Culebra			

Summary: Mr. Thomas said that he has lived on Culebra for about 20 years and has made over 20,000 dives in the area. He added that he served on a torpedo boat when he was in the Navy.

He said that he has seen ordnance virtually everywhere to the west and east of Culebra, and even a few items off Punta del Soldado and Cayo Norte. He said the highest concentration of OEW is in the area surrounding Flamenco Peninsula, and of that most of the OEW is to the west. He has seen items from bullets to bombs to 16" projectiles and torpedoes. The torpedo was spotted near Cayos Geniqui. Mr. Thomas marked a map with the OEW areas.

He said there is aircraft wreckage west of Isla Culebrita and southeast of Los Gemelos. He also said there is a dump site southeast of Cayo de Luis Pena where he has seen brass and other used items in the water. He added that underwater cables remain between Cayo Luis Pena and Cayo del Agua and Cayo Raton, and speculated that these cables were part of the former range instrumentation system.

Mr. Thomas noted that the sands can shift, covering as well as uncovering reefs and ordnance. He noted that the bottom is mostly sand. He said that large projectiles near Alcarraza disappeared after Hurricane Hugo and theorized they may have blown up. He expressed concern over the lack of safety awareness and suggested the posting of warning notices at marinas on the main island of Puerto Rico. He knows that people have taken projectiles and removed the rotating band, and he has observed boaters/divers picking up underwater ordnance. He pointed out three areas with high concentrations of ordnance and boats anchoring/people diving: the northern end of Isla Culebrita, the north

Flamenco Peninsula, which is accessible on foot and by boaters. Ms. Tallevast was also concerned with the same three areas Mr. Thomas had mentioned: the north end of Culebrita, the north beach of Luis Pena (both NWR land), and Carlos Rosario Beach off Flamenco Peninsula (DNR property).

She noted that any clean-up will required close coordination with DNR and NWR and provided a list of endangered plant and animal species. She said the peak nesting season for sea birds is April through September, and for Hawksbill turtles it is August through December.

Mrs. Tallevast offered her assistance during all phases of the ASR and and preparations for the clean-up.

**ACTION REQUIRED**

None

NAME OF PERSON DOCUMENTING COVERSATION	ORGANIZATION	TELEPHONE NUMBER
Ronald Plante	CENCR-ED-DN	(309) 794-5806
SIGNATURE	TITLE	DATE
<i>Ronald Plante</i>	QASAS	10/24/94

**I-10**

<b>CONVERSATION RECORD</b>		<b>TIME</b> 2:00 PM	<b>DATE</b> Oct 5, 1994
<b>TYPE</b>			
<input checked="" type="checkbox"/> VISIT		<input type="checkbox"/> CONFERENCE	<input type="checkbox"/> TELEPHONE
			INCOMING
			OUTGOING
<b>NAME OF PERSON CONTACTED</b> Ms. Teresa Tallevast	<b>ORGANIZATION</b> Manager, Culebra Wildlife Refuge	<b>TELEPHONE NO.</b> (809) 742-0115	
<b>SUBJECT</b> OEW on Culebra			

Summary: Ms. Tallevast said that she has worked on Culebra for 6 years and has been refuge manager for about two years. She said that Culebra's property lines are not precisely drawn, but the NWR owns somewhere between 1480 and 1500 acres, all of which is former Navy property. She added that DNR owns the water from the high tide level out to 9 miles.

She marked a map with the NWR property where she personally has observed suspected ordnance. This includes: Cayo Tiburon, Cayos Geniqui, Cayo Botella, Culebrita, Cayo Matojo, Falemco Peninsula, Alcarraza, Cayo Lobito, Cayo Lobo, Cayo Yerba, Cayo Raton, Cayo del Agua, and Cayo de Luis Pena. She pointed out that there are additional keys that belong to the NWR and were used for bombing, but she has not been to all of them. She was unaware of any ordnance on NWR property on Culebra Island other than Flamenco Peninsula.

Ms. Tallevast said that the NWR owns the 500+ acre Monte Resaca parcel which is listed on old maps as the operations area. She said this remote area has very steep terrain and is heavily wooded. She was unaware of any ordnance found there but said the area is not frequently visited.

She said she was concerned about ordnance everywhere on NWR property, since biologists and researchers periodically visit all the property to monitor the wildlife. Her major concern, though, was for areas that are heavily frequented by the public. These areas include the coastline of

<b>CONVERSATION RECORD</b>		TIME 3:00 PM	DATE Oct 5, 1994
TYPE			
<input type="checkbox"/> VISIT		<input type="checkbox"/> CONFERENCE	<input checked="" type="checkbox"/> TELEPHONE
			<input type="checkbox"/> INCOMING
			<input checked="" type="checkbox"/> OUTGOING
NAME OF PERSON CONTACTED Ms. Nadeen Decicco	ORGANIZATION Property Owner	TELEPHONE NO. (809) 722-0660	

SUBJECT OEW on Culebra

Summary: Ms. Decicco said that she has a weekend cottage on top of the hill above Punta Caranero. In her garden, there are the remains of structures which she has been told are a former gun site. She has heard from island residents that these sites were constructed but never used. She has also heard there were other similar sites on the island.

She said that the trench-type structure has 1906 or 1907 marked on one of the walls, but there are no markings on the concrete pads that may have been gun mounts. Ms. Decicco said she has found belt buckles and possible wooden barrels in the ground but no trace of any ordnance.

Although she was willing to allow us to visit and photograph the site, Ms. Decicco emphasized that she does not want anyone disturbing the property. She uses the structures as part of her garden and wishes for them to remain there intact.

**ACTION REQUIRED**

None

NAME OF PERSON DOCUMENTING COVERSATION Ronald Plante	ORGANIZATION CENCR-ED-DN	TELEPHONE NUMBER (309) 794-5806
SIGNATURE <i>Ronald Plante</i>	TITLE QASAS	DATE 10/02/94

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX J

PRESENT SITE PHOTOGRAPHS

- J-22. Area B: HE bomb fragments, Cayo del Agua
- J-23. Area B: Cayo Yerba
- J-24. Area B: Cayo Raton
- J-25. Area B: El Mono
- J-26. Area B: Cayo Lobo beaching site
- J-27. Area B: Target area, Cayo Lobo
- J-28. Area B: Cayo Lobito
- J-29. Area B: Alcarraza
- J-30. Area B: Los Gemelos
- J-31. Area B: Los Gemelos
- J-32. Area C: Piedra Stevens
- J-33. Area C: Flamenco Beach
- J-34. Area C: DNR Campground entrance
- J-35. Area C: Parking lot and campground
- J-36. Area C: Campground area
- J-37. Area C: Inland tank target
- J-38. Area C: Flamenco Beach tank target
- J-39. Area C: Tiny Tim rocket on DNR beach
- J-40. Area C: Tank target in Peninsula hills
- J-41. Area C: Warning sign at FWS gate
- J-42. Area C: Entrance to FWS property
- J-43. Area C: 5" rocket on FWS property
- J-44. Area C: West side of Flamenco Peninsula
- J-45. Area C: West side of Flamenco Peninsula

- J-46. Area C: Spotting station, west side of Flamenco Peninsula
- J-47. Area C: East side of Flamenco Peninsula
- J-48. Area D: Mortar range firing point
- J-49. Area D: View of impact area from firing point
- J-50. Area D: View of firing point from impact area
- J-51. Area D: Impact area
- J-52. Area D: Mortar fragment
- J-53. Area E: General area of airport rifle range
- J-54. Area G: Lower Camp, empty projectile at DNR office
- J-55. Area G: Lower Camp, Naval Magazine
- J-56. Area H: Lower Camp, western dump
- J-57. Area H: Lower Camp, eastern dump
- J-58. Area J: Punta Carenero, Navy gun mount
- J-59. Area J: Punta Carenero, Navy trench
- J-60. Area O: Mt Reseca operations area from OP helipad
- J-61. Areas N & O: Playa Reseca from OP helipad
- J-62. Area O: Mk 76 practice bomb, Culebra display
- J-63. Area O: Projectile, Culebra ordnance display
- J-64. Area O: 81mm mortar rear body and fin assembly, Culebra display
- J-65. Area P: Flamenco Point OP

APPENDIX J

PRESENT SITE PHOTOGRAPHS

Table of contents

- J-1. Area A: Isla de Culebrita
- J-2. Area A: Marc Point, Culebrita
- J-3. Area A: Target poles in Culebrita North Bay
- J-4. Area A: Typical beach, Culebrita North Bay
- J-5. Area A: Cayo Botella
- J-6. Area A: HE bomb fragments on Cayo Botella
- J-7. Area A: Practice bombs on Cayo Botella
- J-8. Area A: MK 80 series shape in Botella water
- J-9. Area A: Cayos Geniqui, east
- J-10. Area A: Cayos Geniqui, west
- J-11. Area A: MK 14/15 bomb fin on Geniqui west
- J-12. Area A: Cayo Tiburon
- J-13. Area A: Cayo Ballena
- J-14. Area A: Cayo Sombrerito
- J-15. Area A: Cayo Norte
- J-16. Area A: Part-time residence, Cayo Norte
- J-17. Area B: Cayo de Luis Pena
- J-18. Area B: North Bay, Cayo de Luis Pena
- J-19. Area B: Suspected OEW, North Bay, Cayo  
de Luis Pena
- J-20. Area B: Cayo del Agua
- J-21. Area B: Target area, Cayo del Agua



J-1. Area A: Isla de Culebrita



J-2. Area A: Marc Point, Culebrita



J-3. Area A: Target poles in Culebrita North Bay



J-4. Area A: Typical beach, Culebrita North Bay



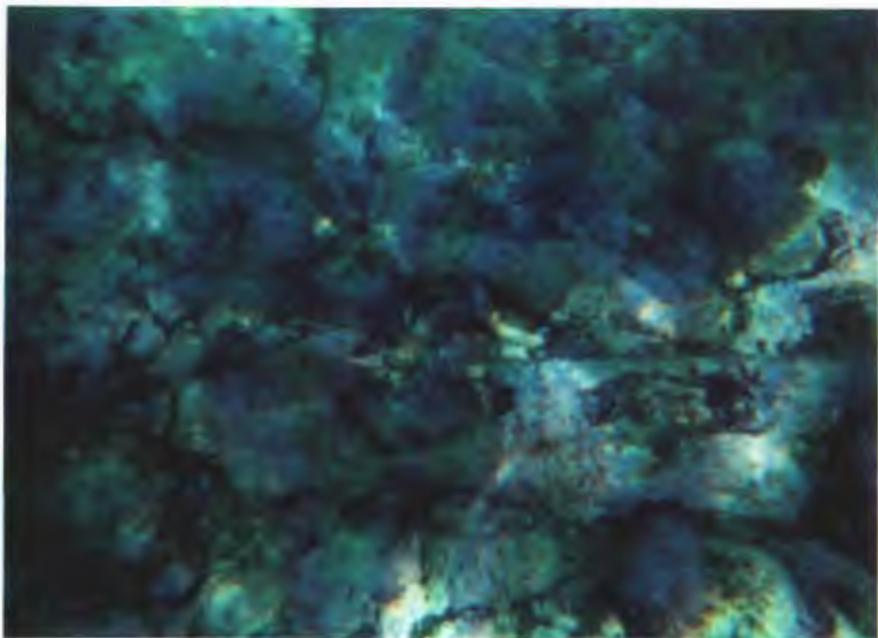
J-5. Area A: Cayo Botella



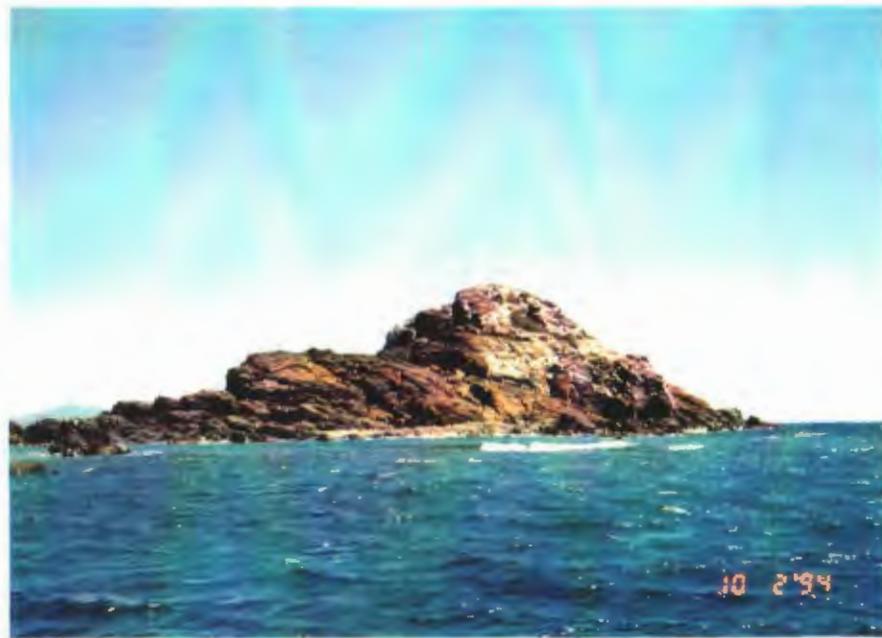
J-6. Area A: HE bomb fragments on Cayo Botella



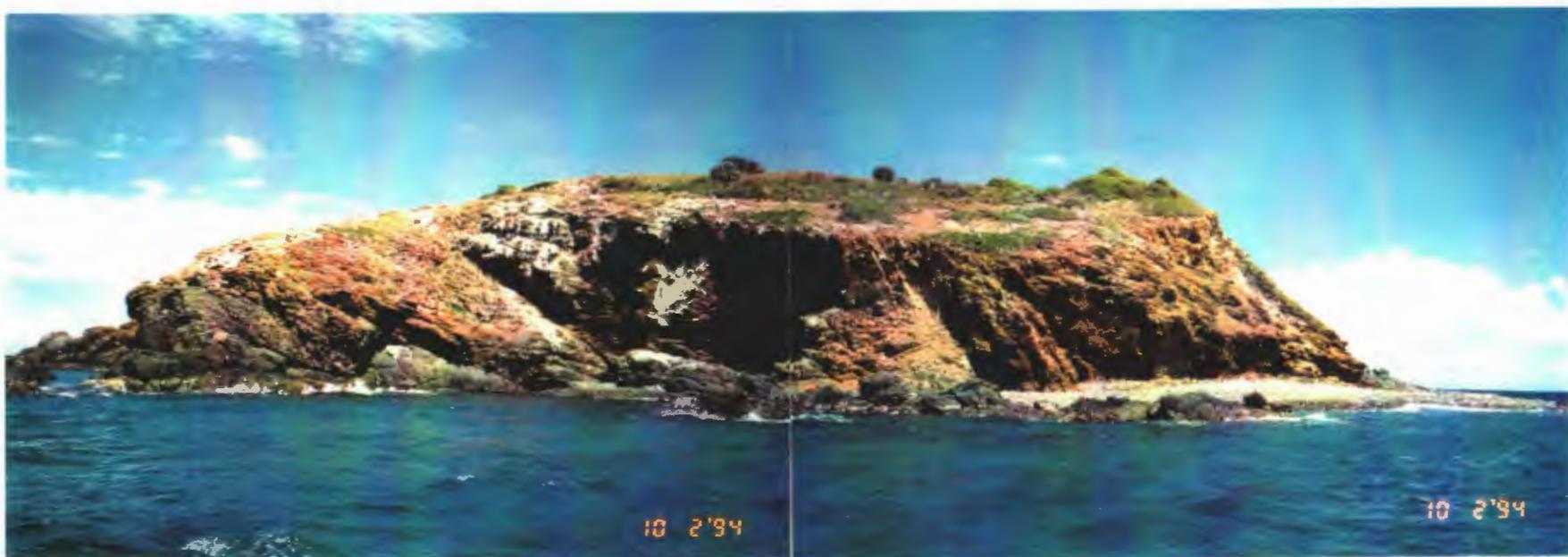
J-7. Area A: Practice bombs on Cayo Botella



J-8. Area A: MK 80 series shape in Botella water



J-9. Area A: Cayos Geniqui, east



J-10. Area A: Cayos Geniqui, west



J-11. Area A: MK 14/15 bomb fin on Geniqui west



J-12. Area A: Cayo Tiburon



J-13. Area A: Cayo Ballena



J-14. Area A: Cayo Sombrerito



J-15. Area A: Cayo Norte



J-16. Area A: Part-time residence, Cayo Norte



J-17. Area B: Cayo de Luis Pena



J-18. Area B: North Bay, Cayo de Luis Pena



J-19. Area B: Suspected OEW, North Bay, Cayo de Luis Pena



J-20. Area B: Cayo del Agua



J-21. Area B: Target area, Cayo del Agua



J-22. Area B: HE bomb fragments, Cayo del Agua



J-23. Area B: Cayo Yerba



J-24. Area B: Cayo Raton



J-25. Area B: El Mono



J-26. Area B: Cayo Lobo beaching site



J-27. Area B: Target area, Cayo Lobo



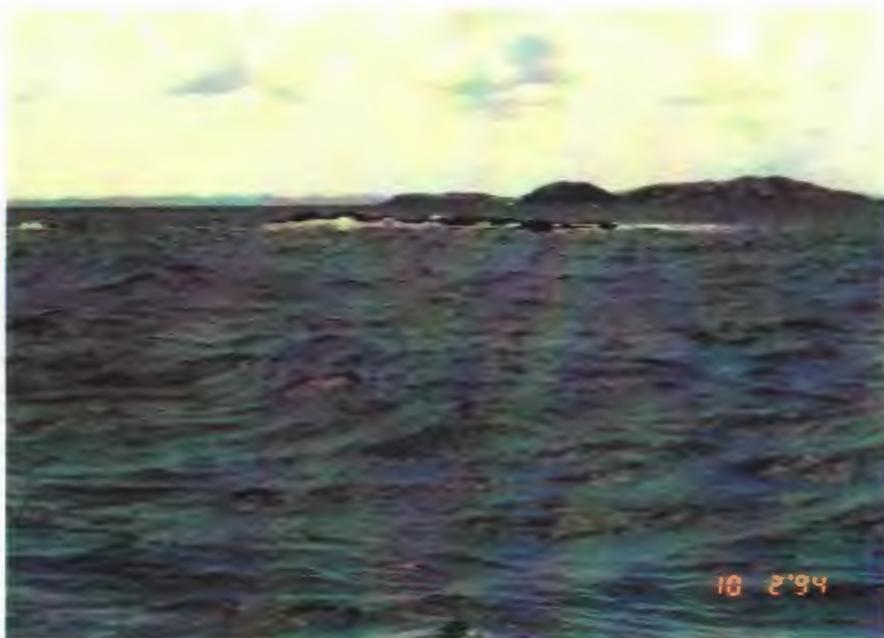
J-28. Area B: Cayo Lobito



J-29. Area B: Alcarraza



J-30. Area B: Los Gemelos



J-31. Area B: Los Gemelos



J-32. Area C: Piedra Stevens



J-33. Area C: Flamenco Beach



J-34. Area C: DNR Campground entrance



J-35. Area C: Parking lot and campground



J-36. Area C: Campground area



J-37. Area C: Inland tank target



J-38. Area C: Flamenco Beach tank target



J-39. Area C: Tiny Tim rocket on DNR beach



J-40. Area C: Tank target in Peninsula hills



J-41. Area C: Warning sign at FWS gate



J-42. Area C: Entrance to FWS property



J-43. Area C: 5" rocket on FWS property



J-44. Area C: West side of Flamenco Peninsula



J-45. Area C: West side of Flamenco Peninsula



J-46. Area C: Spotting station, west side of Flamenco Peninsula



J-47. Area C: East side of Flamenco Peninsula



J-48. Area D: Mortar range firing point



J-49. Area D: View of impact area from firing point



J-50. Area D: View of firing point from impact area



J-51. Area D: Impact area



J-52. Area D: Mortar fragment



J-53. Area E: General area of airport rifle range



J-54. Area G: Lower Camp, empty projectile at DNR office



J-55. Area G: Lower Camp, Naval Magazine



J-56. Area H: Lower Camp, western dump



J-57. Area H: Lower Camp, eastern dump



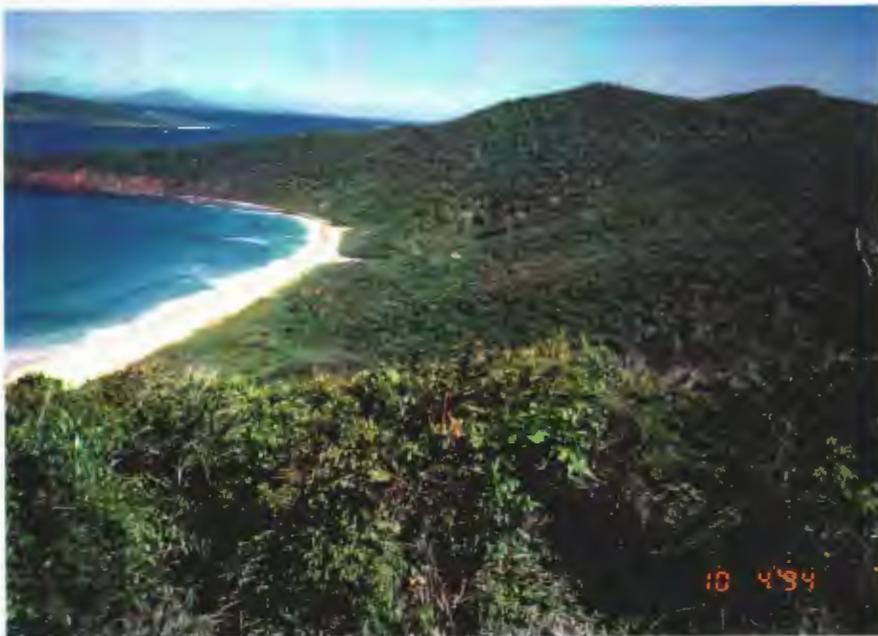
J-58. Area J: Punta Carenero, Navy gun mount



J-59. Area J: Punta Carenero, Navy trench



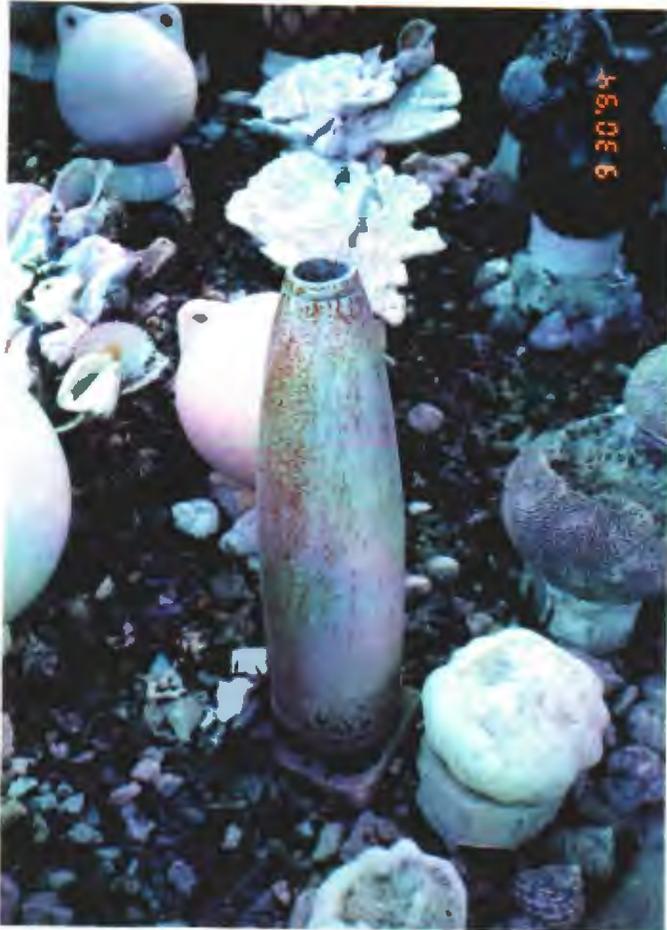
J-60. Area O: Mt Reseca operations area from  
OP helipad



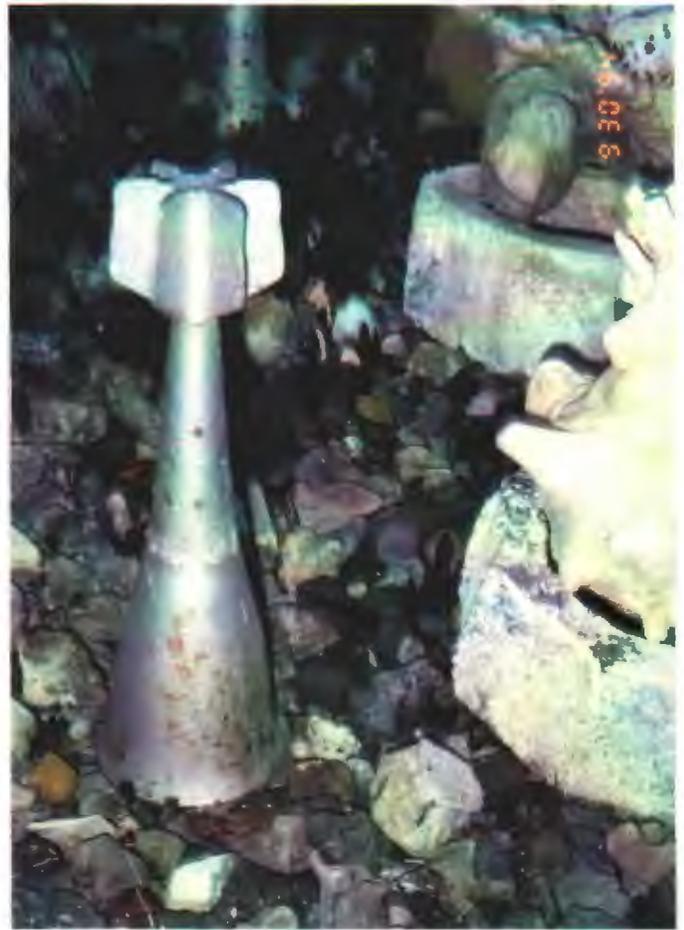
J-61. Areas N & O: Playa Reseca from OP helipad



J-62. Area O: Downtown Culebra ordnance display



J-63. Area O: Projectile, Culebra ordnance display



J-64. Area O: 81mm mortar rear body & fin assembly, Culebra display



J-65. Area P: Flamenco Point OP

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX K

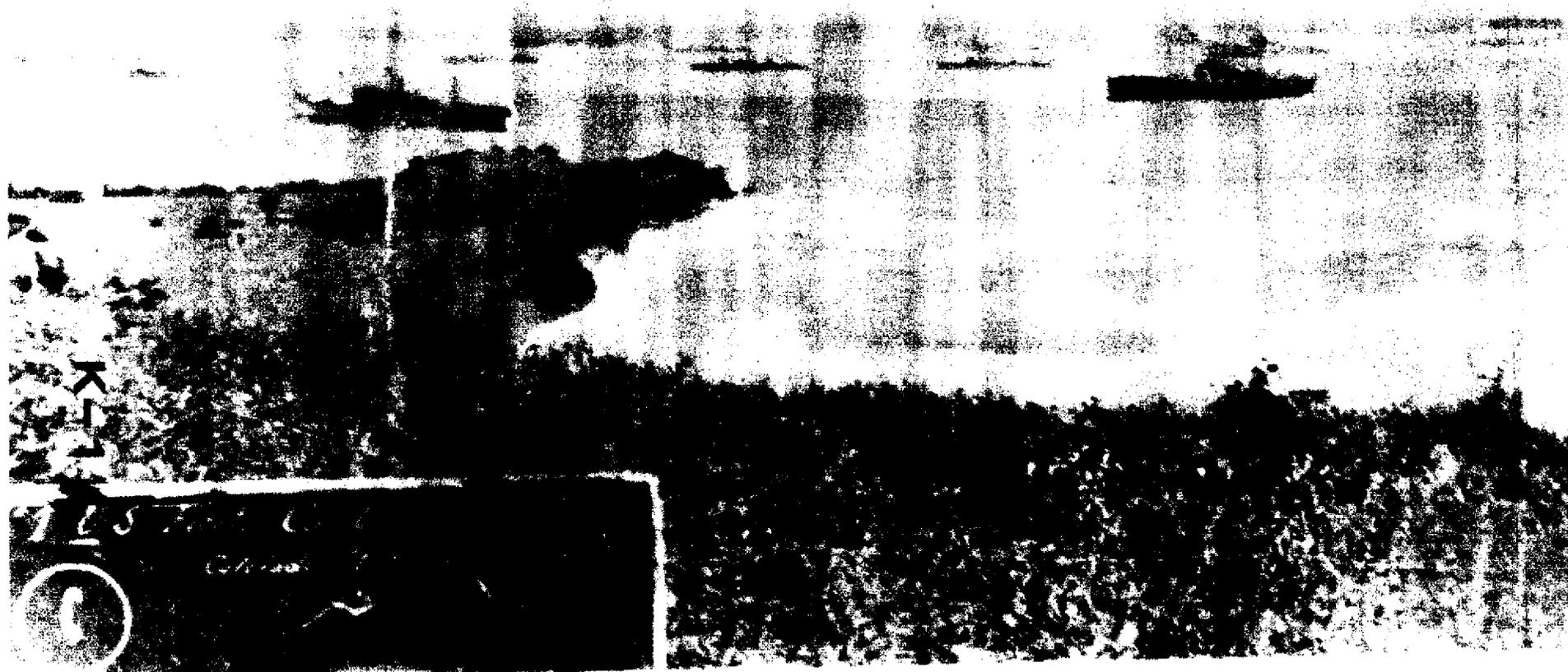
HISTORICAL PHOTOGRAPHS

Appendix K  
Historical Photographs

Table of Contents

- K-1. Fleet anchorage during 1924 exercises (B-128).
- K-2. US Marines landing during 1924 exercises (B-101).
- K-3. 1945 air target photo of Flamenco Peninsula (B-115).
- NOTE: Photos K-4 through K-12 provided by AFWTF.
- K-4 & K-5. Airfield 6/12/68.
- K-6. Ladrone Cay target (Cayo Botella) circa 1968.
- K-7. Culebrita strafing range and OP circa 1970.
- K-8. Agua Cay target (Cayo del Agua) circa 1971.
- K-9. Flamenco Peninsula 1/71.
- K-10. Cayo de Luis Pena run-in line and OP (including Cayo del Agua, Cayo Raton, Cayo Yerba, El Mono, Cayo Lobo, & Cayo Lobito) 9/71.
- K-11. White phosphorous rounds impacting just north of Flamenco Beach.
- K-12. Puff-round on Flamenco Peninsula circa 1972.
- K-13. 1985 aerial photo (B-133).
- K-14. Airfield and adjacent camp, 2/38 (B-113).
- K-15. US Fleet anchored near Cayo de Luis Pena, 3/39 (B-114).
- K-16. Lower camp, 9/43 (B-118).

NORTH →



**NORTH →**

**CAYO DE LUIS PENA**



Amphibious Development: Marines storm Culebra beaches, 1924



National Archives

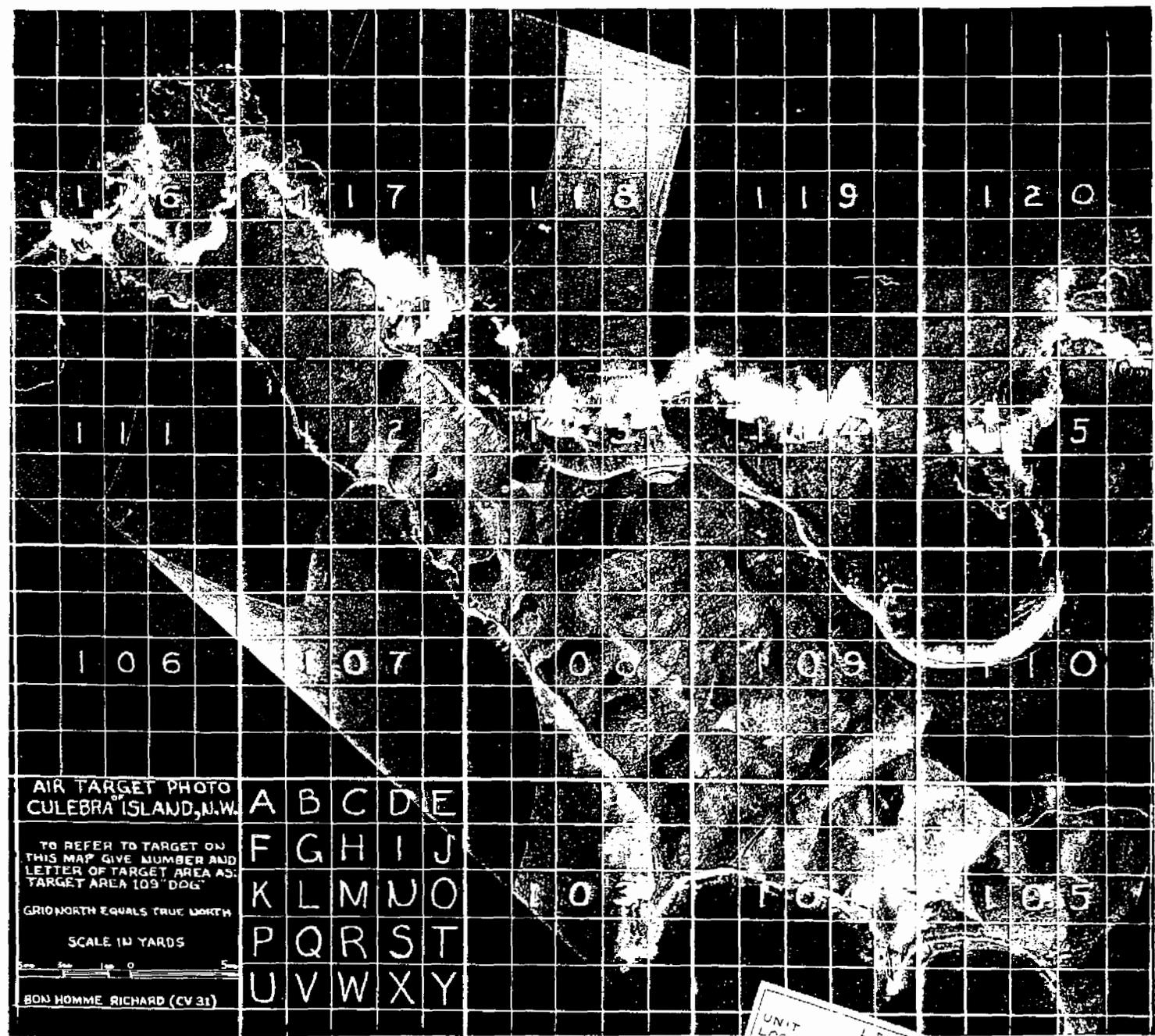
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National Archives

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NORTH

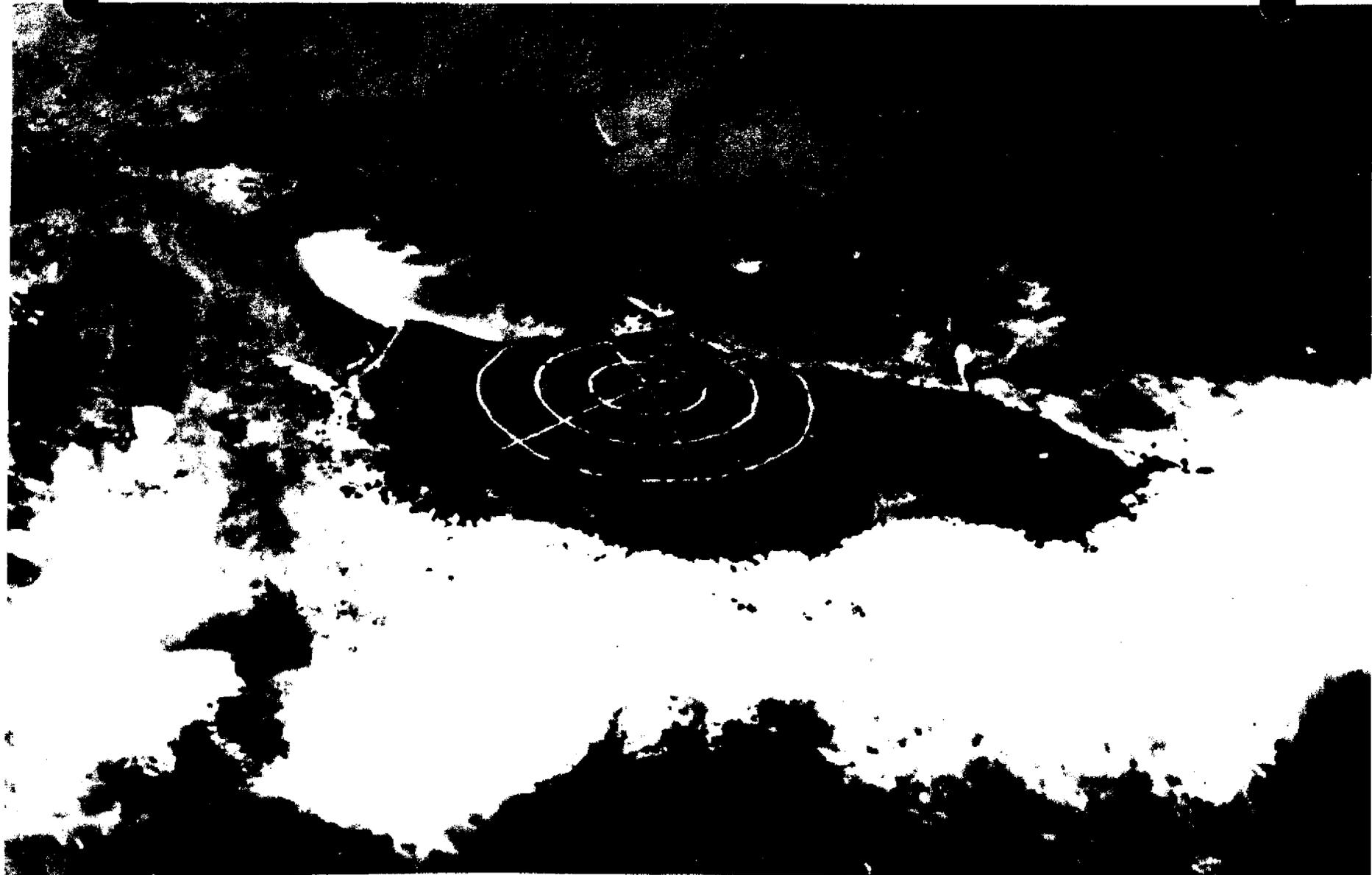
K-3

↑  
NORTH



K-4





LADRONE CAY TARGET  
CAYO BOTELLA

CULEBRITA OBSERVATION POST

← NORTH

CULEBRITA STRAFFING RANGE

K-7

CULEBRITA STRAFFING TARGET  
RUN IN 205°

A high-contrast, black and white aerial photograph showing a coastal area. The image is dominated by dark, textured terrain, likely water or dense vegetation, with a prominent, bright white area in the upper center that appears to be a beach or a cleared area. The overall image has a grainy, high-contrast quality. A white rectangular label is overlaid at the bottom, containing the text "AGUA CAY TARGET" and "CAYO DEL AGUA" in a bold, sans-serif font.

AGUA CAY TARGET  
CAYO DEL AGUA



↑  
NORTH

K-9

CAYO LOBITO

CAYO LOBO

EL MONO

CAYO RATON

CAYO YERBA

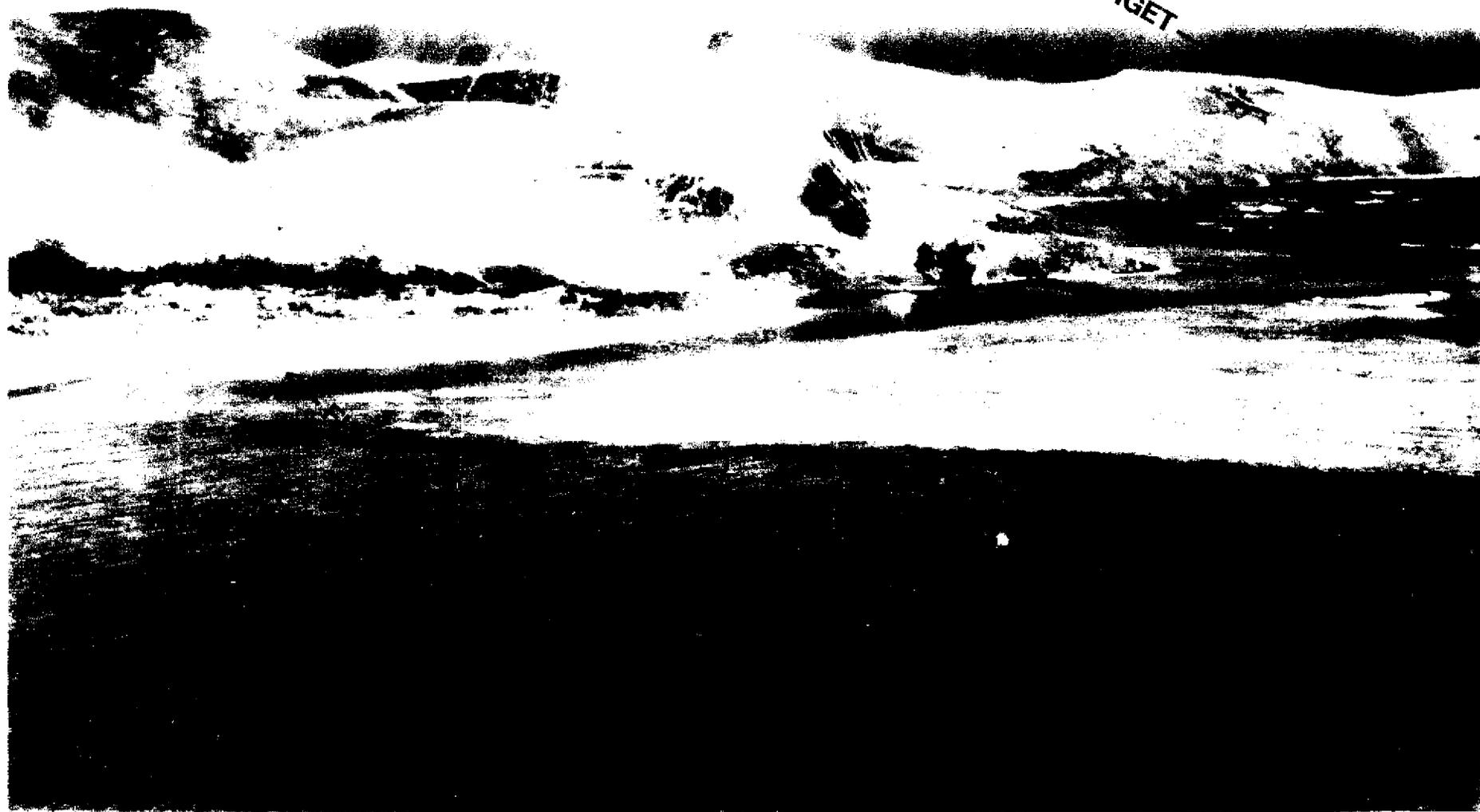
NORTH →

OP



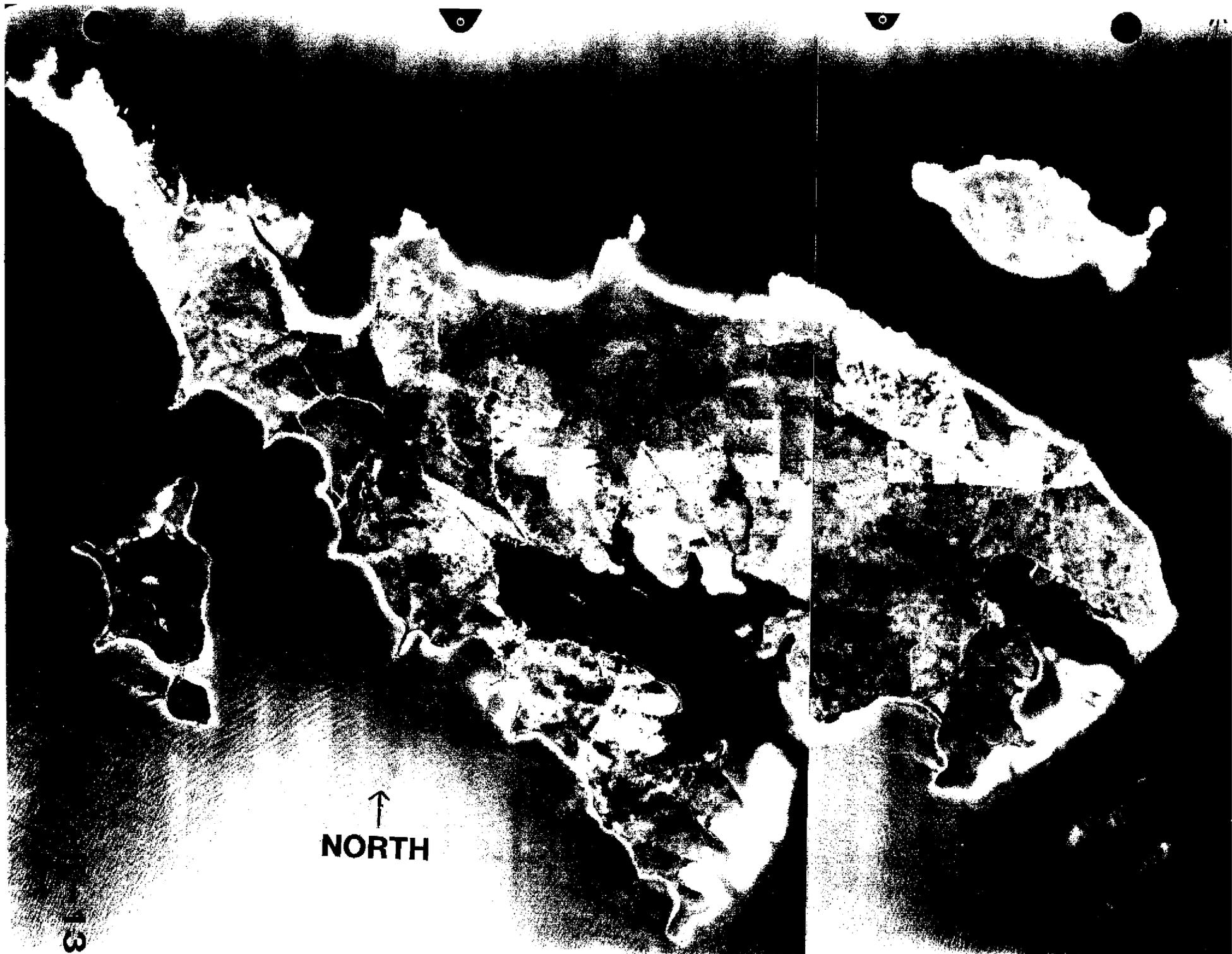
NORTH →

BULLSEYE TARGET →





12



↑  
NORTH

REF ID: A61104

UNITED STATES AIR FORCE

PHOTOGRAPH

REF ID: A61104

NORTH

AIRFIELD



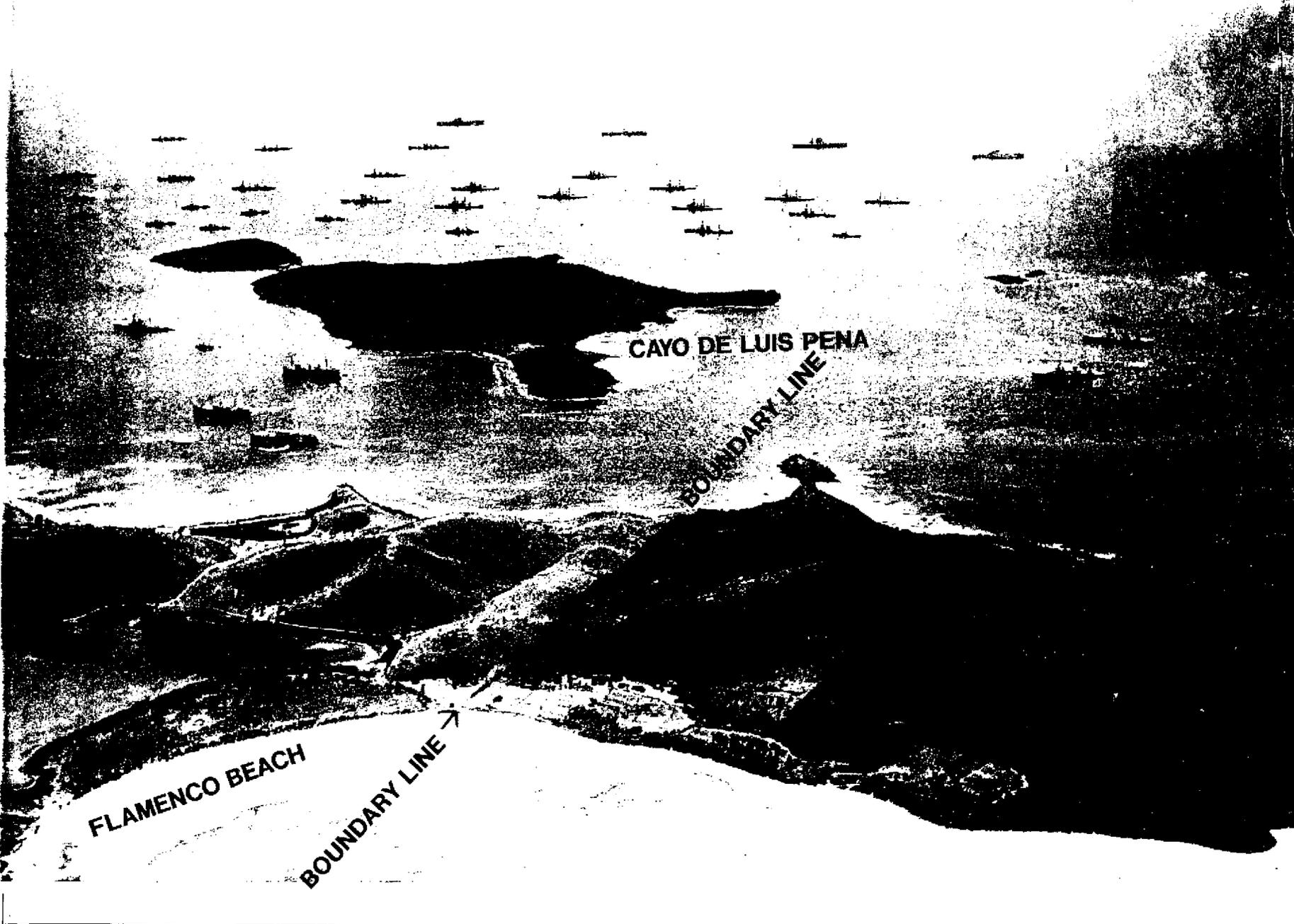
OF  
SEA,

WORLD,

39

4/18

National Archives



PAGE OF

7

1951

K-15

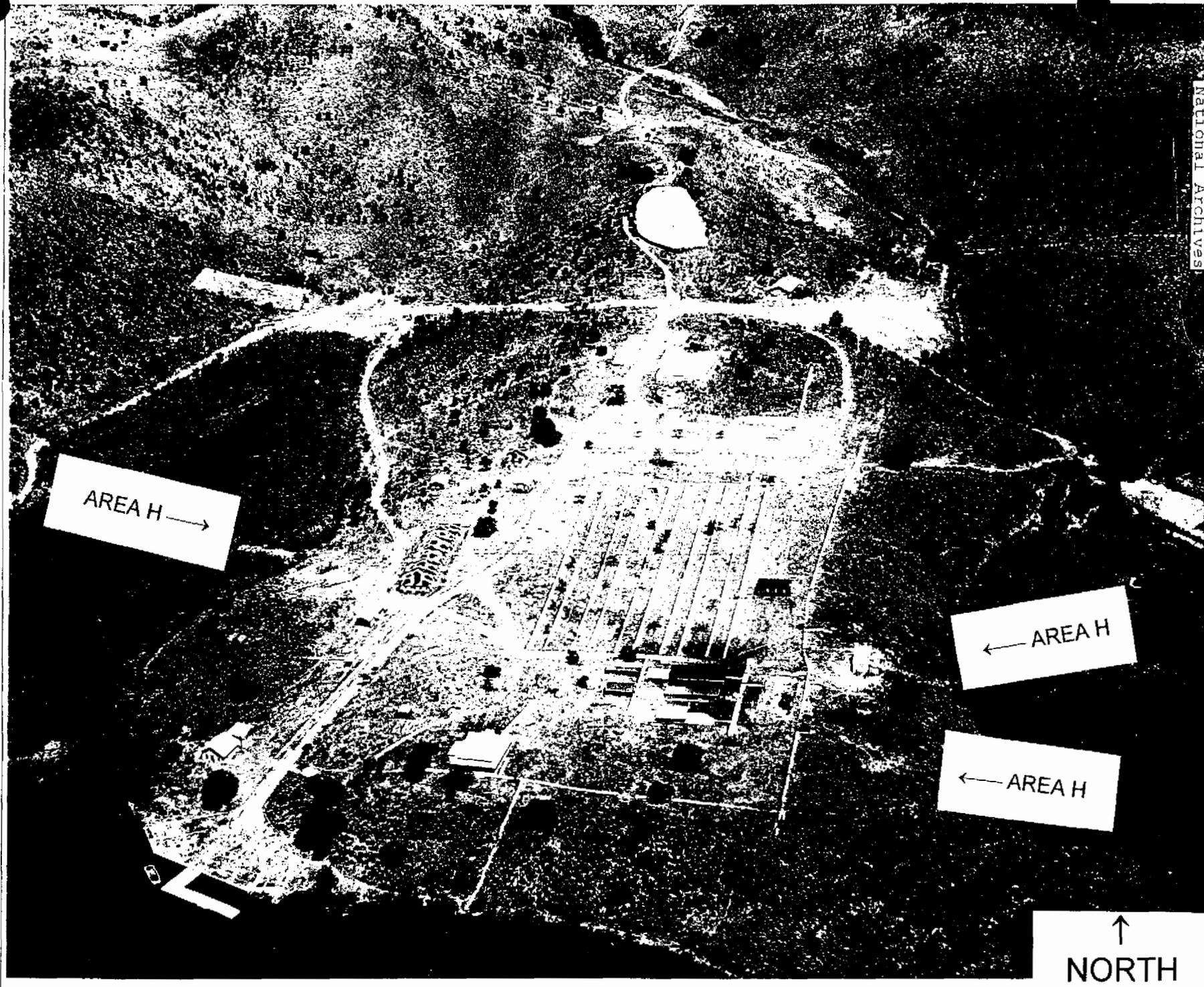
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ora, P. R.  
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K-16



ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX L

REFERENCE MAPS/DRAWINGS

APPENDIX L

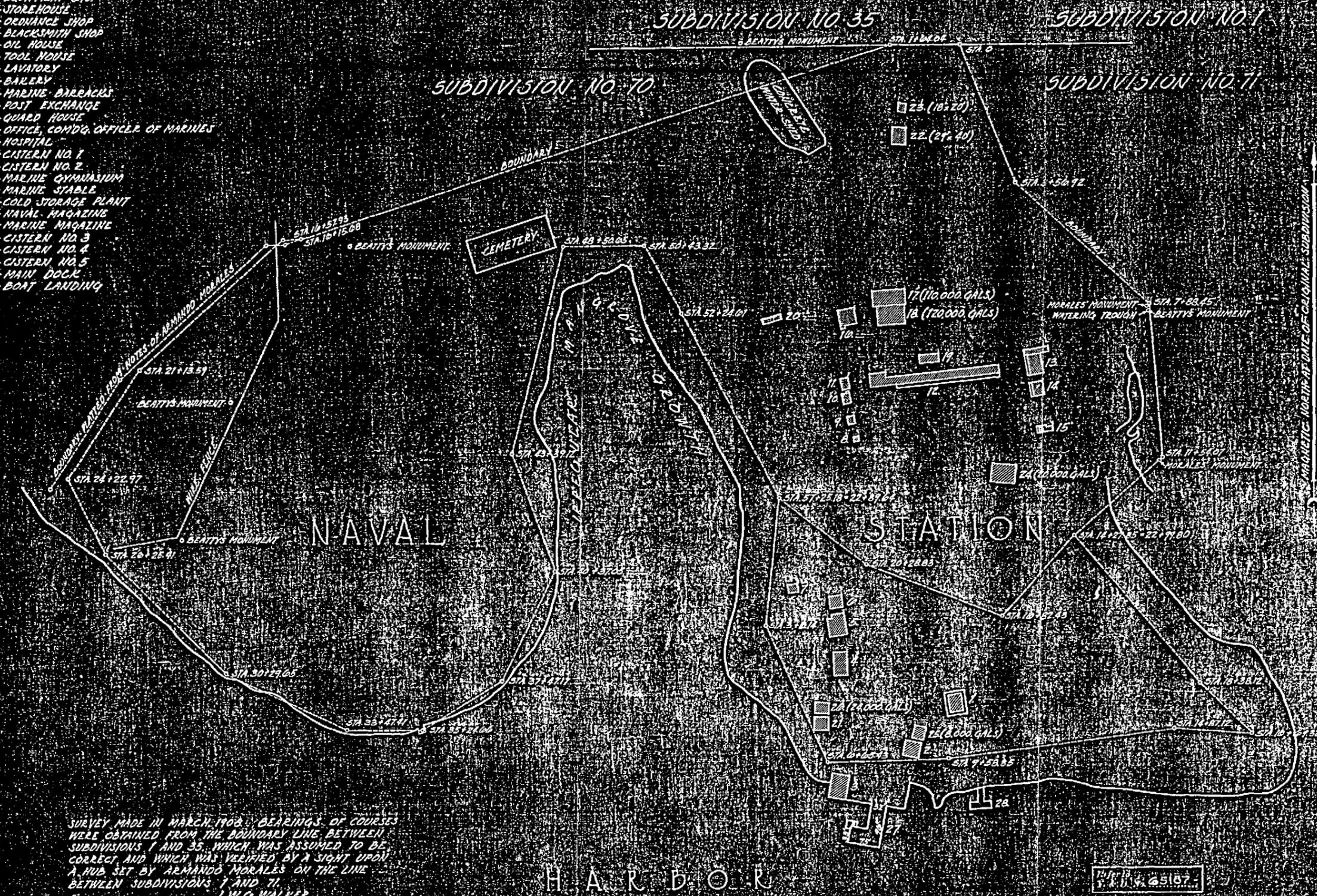
REFERENCE MAPS/DRAWINGS

Table of Contents

- L-1. Lower Camp map dated 2-19-16 (B-93).
- L-2. Lower Camp map dated 6-30-53 (B-134).
- L-3. Airfield map dated 6-30-44 (B-117).
- L-4. Airfield map dated 6-30-47 (B-120).
- L-5. Culebra master property map dated 10-12-50 (B-83).
- L-6. Impact area map dated 6-30-53 (B-135).
- L-7. Real estate map dated 5-27-68 (B-85).
- L-8. NOAA mariner's chart of Culebra (B-90).
- L-9. 1925 property map (B-94).
- L-10. USMC map dated 12/12/13 (B-123).
- L-11. Flight patterns and range map, 1965 (B-20).
- L-12. Flight patterns and range map, 1972 (B-1).

**BUILDINGS**

- 1 - OFFICE BUILDING
- 2 - STOREHOUSE
- 3 - BOAT SHOP
- 4 - EQUIPMENT SHOP
- 5 - STOREHOUSE
- 6 - ORDNANCE SHOP
- 7 - BLACKSMITH SHOP
- 8 - OIL HOUSE
- 9 - TOOL HOUSE
- 10 - LAVATORY
- 11 - BAKERY
- 12 - MARINE BARBACUE
- 13 - POST EXCHANGE
- 14 - GUARD HOUSE
- 15 - OFFICE, COM'DG. OFFICER OF MARINES
- 16 - HOSPITAL
- 17 - CISTERN NO. 1
- 18 - CISTERN NO. 2
- 19 - MARINE GYMNASIUM
- 20 - MARINE STABLE
- 21 - COLD STORAGE PLANT
- 22 - NAVAL MAGAZINE
- 23 - MARINE MAGAZINE
- 24 - CISTERN NO. 3
- 25 - CISTERN NO. 4
- 26 - CISTERN NO. 5
- 27 - MAIN DOCK
- 28 - BOAT LANDING



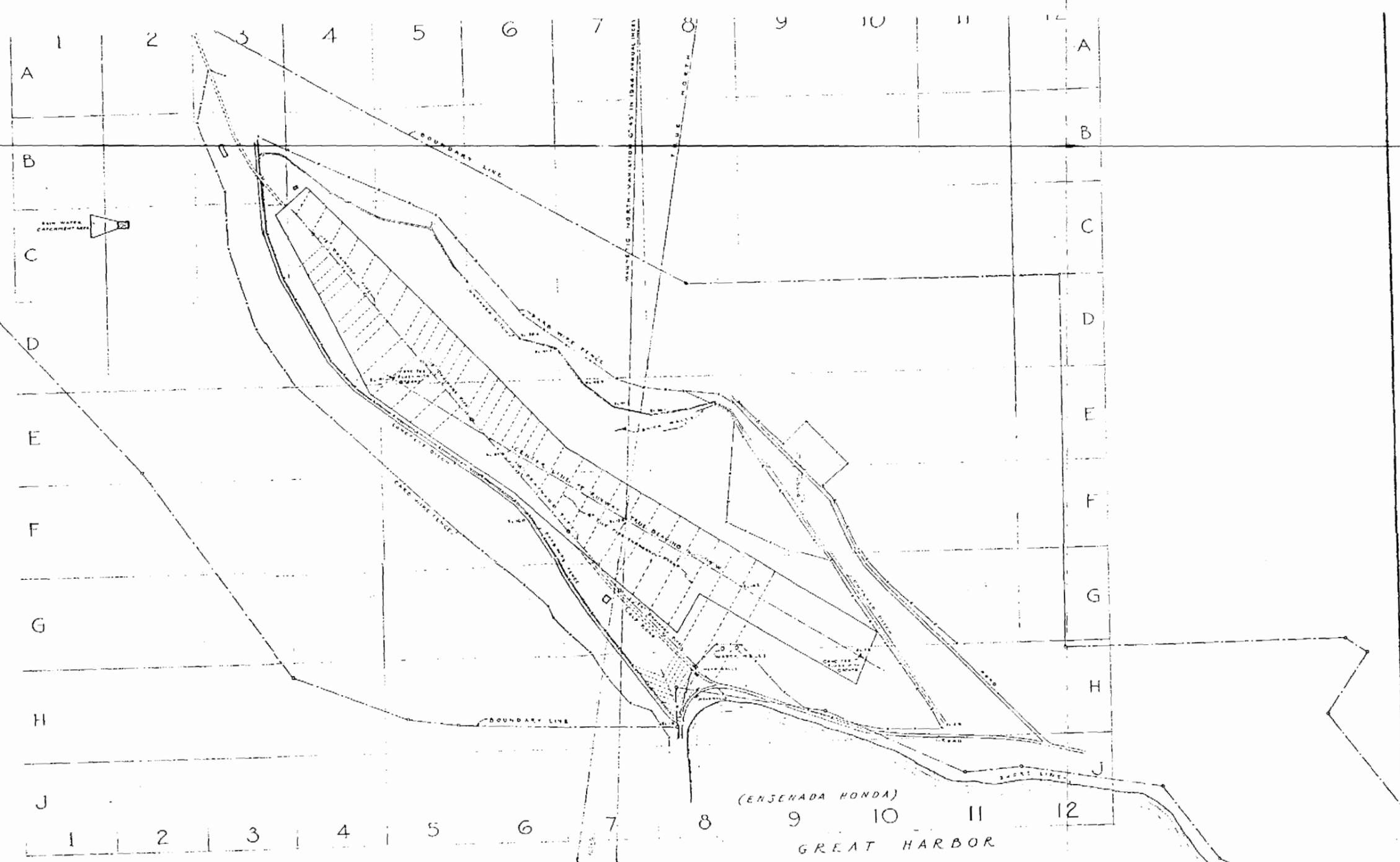
SURVEY MADE IN MARCH, 1908. BEARINGS OF COURSES WERE OBTAINED FROM THE BOUNDARY LINE BETWEEN SUBDIVISIONS 1 AND 35, WHICH WAS ASSUMED TO BE CORRECT AND WHICH WAS VERIFIED BY A SIGHT UPON A HUB SET BY ARMANDO MORALES ON THE LINE BETWEEN SUBDIVISIONS 1 AND 71.

J. W. G. WALKER  
 CIVIL ENGINEER, U.S. NAVY  
 ADDITIONS FROM RECONNAISSANCE BY CAPT. E. H. ELLIS,  
 U.S. M.C., NOV. 1913.

SCALE 1 INCH = 100 FEET

U.S. NAVAL STATION  
 CULEBRA, P.R.





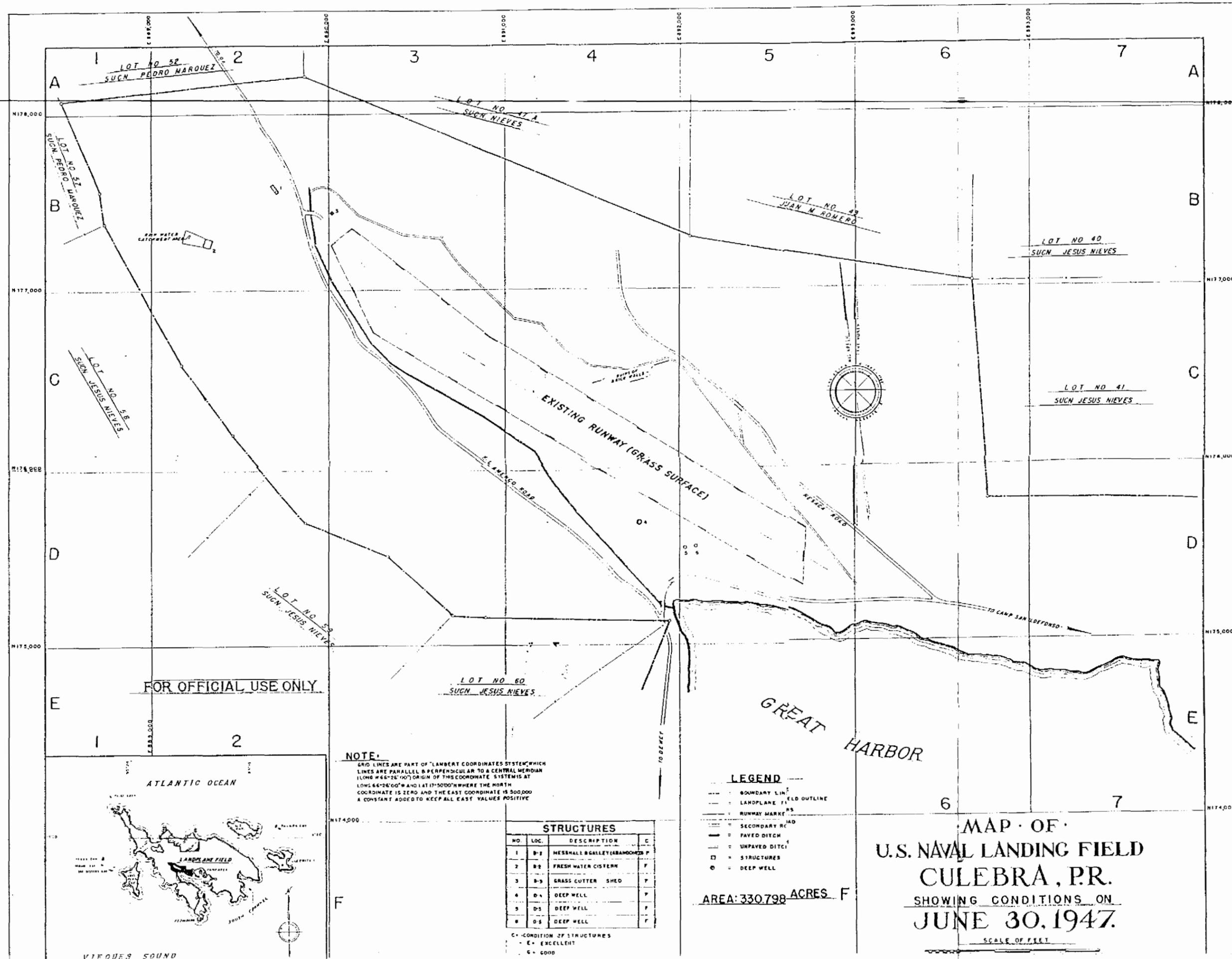
NAVY-OP ARCHIVES  
 BASE MAINT (OP-441 H)  
 BOX 86, Fd 7

LEGEND		
NO.	LOCATION	STRUCTURE
1	B-3	MESS HALL & GALLEY
2	C-2	FRESH WATER CISTERN
3	B-4	TOOL SHED
4	G-7	STOREROOM

NOTES:  
 AREA = 280 ± ACRES  
 INFORMATION FOR BOUNDARY LINE SHOWN  
 OBTAINED FROM OLD PROPERTY SURVEY MAP  
 DATED 6 OCTOBER 1907.

(LAND PLANE FIELD)  
 MAP OF  
 U.S. NAVAL RESERVATION  
 CULEBRA; P.R.  
 SHOWING CONDITIONS ON  
 JUNE 30, 1944  
 SCALE OF FEET

*R. J. ...*  
 LIEUTENANT (C.E.C.) U.S.N.R.  
 PUBLIC WORKS OFFICER.



FOR OFFICIAL USE ONLY

**NOTE:**  
 GRID LINES ARE PART OF LAMBERT COORDINATE SYSTEM WHICH LINES ARE PARALLEL & PERPENDICULAR TO A CENTRAL MERIDIAN (LONG 66°26'00") ORIGIN OF THIS COORDINATE SYSTEM IS AT LONG 66°26'00" W AND LAT 17°50'00" N WHERE THE NORTH COORDINATE IS ZERO AND THE EAST COORDINATE IS 300,000 A CONSTANT ADDED TO KEEP ALL EAST VALUES POSITIVE

STRUCTURES			
NO.	LOC.	DESCRIPTION	C.
1	B-1	MESSHALL GALLEY (ABANDONED)	P
2	B-2	FRESH WATER CISTERN	F
3	B-3	GRASS CUTTER SHED	F
4	D-4	DEEP WELL	F
5	D-5	DEEP WELL	F
6	D-6	DEEP WELL	F

C - CONDITION OF STRUCTURES  
 F - EXCELLENT  
 G - GOOD

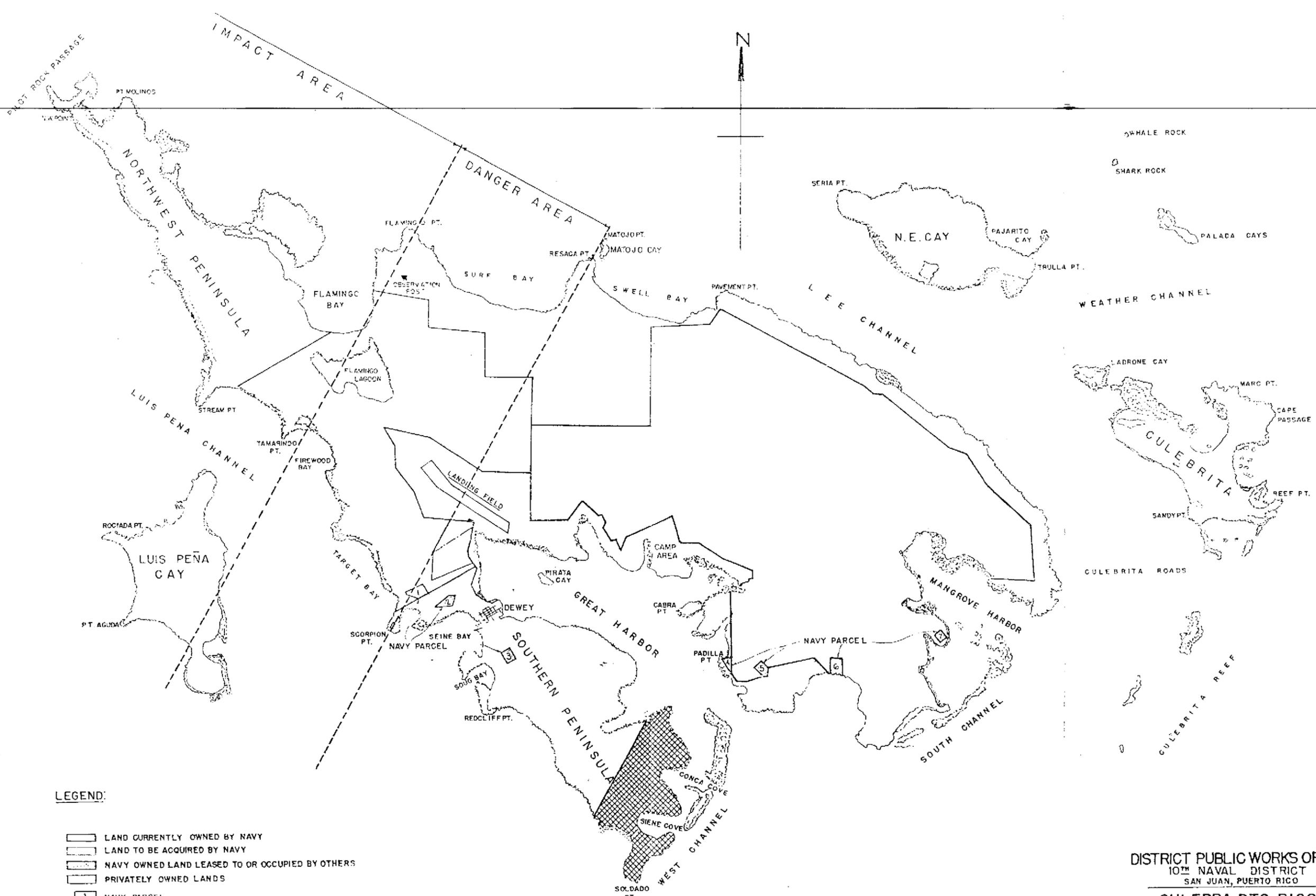
- LEGEND**
- BOUNDARY LINE
  - - - LANDPLANE FIELD OUTLINE
  - RUNWAY MARKER
  - SECONDARY ROAD
  - PAVED DITCH
  - UNPAVED DITCH
  - STRUCTURES
  - DEEP WELL

AREA: 330.798 ACRES F

MAP OF  
 U.S. NAVAL LANDING FIELD  
 CULEBRA, P.R.  
 SHOWING CONDITIONS ON  
 JUNE 30, 1947.

SCALE OF FEET





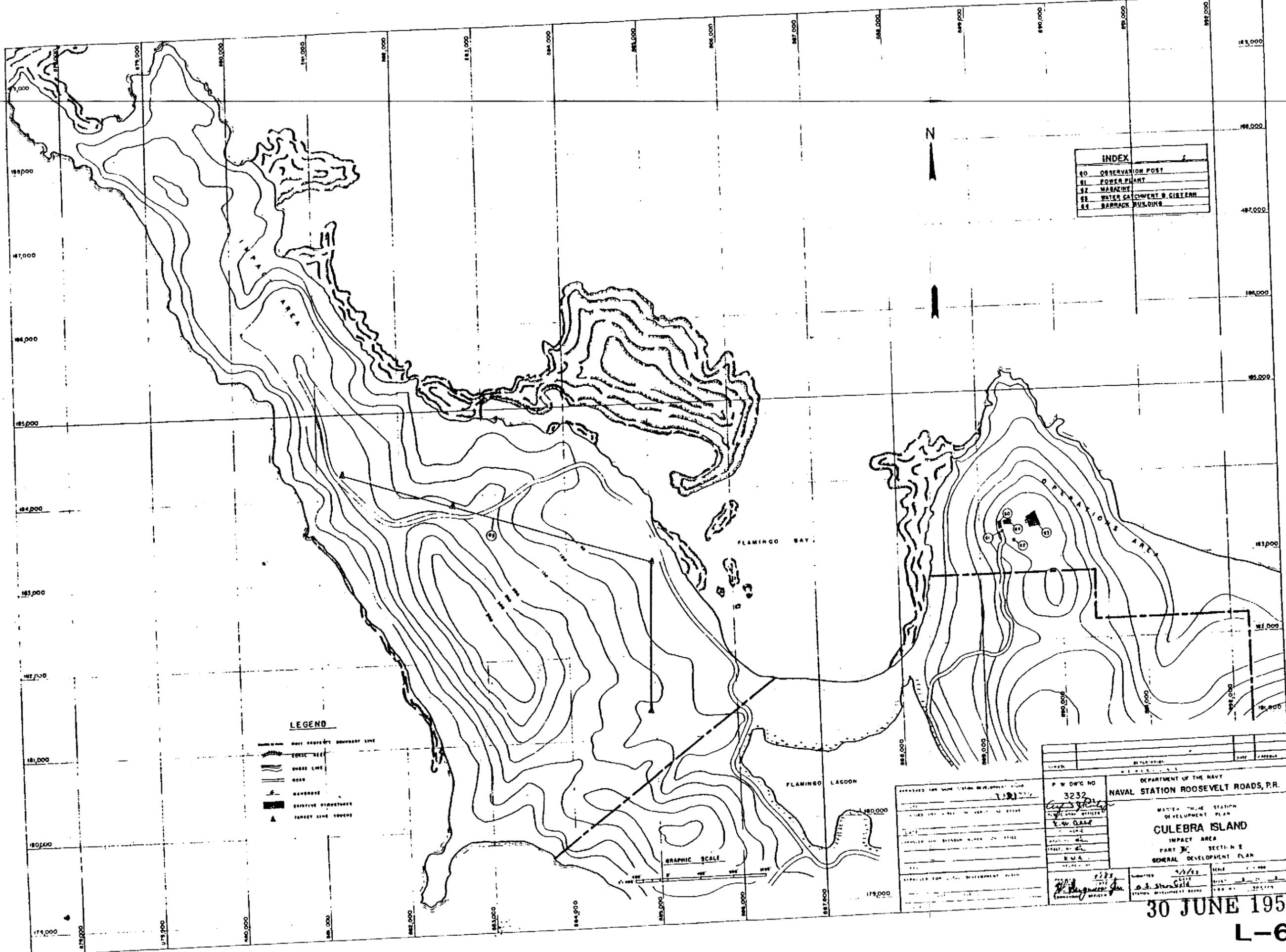
**LEGEND:**

- LAND CURRENTLY OWNED BY NAVY
- LAND TO BE ACQUIRED BY NAVY
- NAVY OWNED LAND LEASED TO OR OCCUPIED BY OTHERS
- PRIVATELY OWNED LANDS
- NAVY PARCEL



DISTRICT PUBLIC WORKS OFFICE  
 10<sup>TH</sup> NAVAL DISTRICT  
 SAN JUAN, PUERTO RICO  
**CULEBRA, P.T.O. RICO**  
**MASTER PROPERTY MAP**

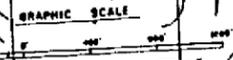
10<sup>TH</sup> N.D. P.W. SK. N° 711  
 OCTOBER 12, 1950



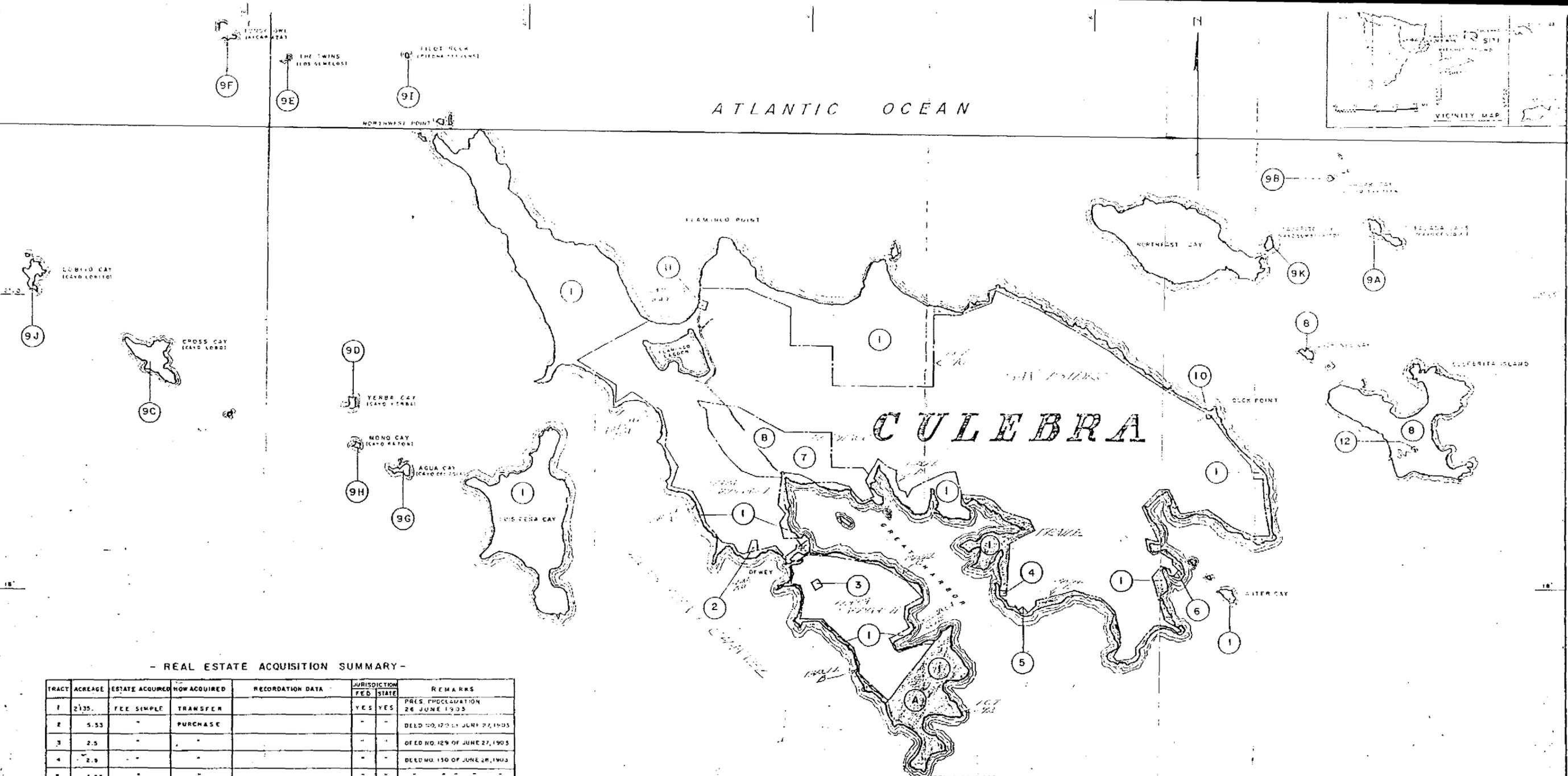
INDEX	
40	OBSERVATION POST
41	POWER PLANT
42	MAGAZINE
43	WATER CATCHMENT & CISTERN
44	BARRACK BUILDING

**LEGEND**

- DASHED GEOMETRY BOUNDARY LINE
- CORALS REEF
- SHOAL LINE
- ROAD
- RAILROAD
- EXISTING STRUCTURES
- TARGET LINE TARGET



APPROVED FOR THE STATION DEVELOPMENT PLAN	DATE	FORWARDED
NO. 3232		
DEPARTMENT OF THE NAVY NAVAL STATION ROOSEVELT ROADS, P.R.		
MASTER THE STATION DEVELOPMENT PLAN		
IMPACT AREA		
PART III SECTION 2		
GENERAL DEVELOPMENT PLAN		
APPROVED FOR THE STATION DEVELOPMENT PLAN	DATE	FORWARDED
30 JUNE 1953		



- REAL ESTATE ACQUISITION SUMMARY -

TRACT	ACREAGE	ESTATE ACQUIRED		RECORDATION DATA	JURISDICTION		REMARKS
		HOW ACQUIRED	HOW ACQUIRED		FED.	STATE	
1	2135.	FEE SIMPLE	TRANSFER		YES	YES	PRES. PROCLAMATION 26 JUNE 1933
2	5.53		PURCHASE				DEED NO. 127 OF JUNE 27, 1903
3	2.5						DEED NO. 129 OF JUNE 27, 1903
4	2.9						DEED NO. 130 OF JUNE 28, 1903
5	1.25						
6	2.25						
7	268.47		DONATION				DEED NO. 4 OF MARCH 16, 1933
8	265.59		TRANSFER				CG LTR 6 SEP. 1940
9	60.00	LEASE	NOYRI 63108 1 AUG 1964				11 SMALL ISLANDS
10	1.07		NOYRI 63086 1 OCT 1963				
11	2.75		NOYRI 96916 1 JUL 1966				
12	0.41	PERMIT	NOYRI 63150 3 MAR 1965				USCG LIGHT STATION

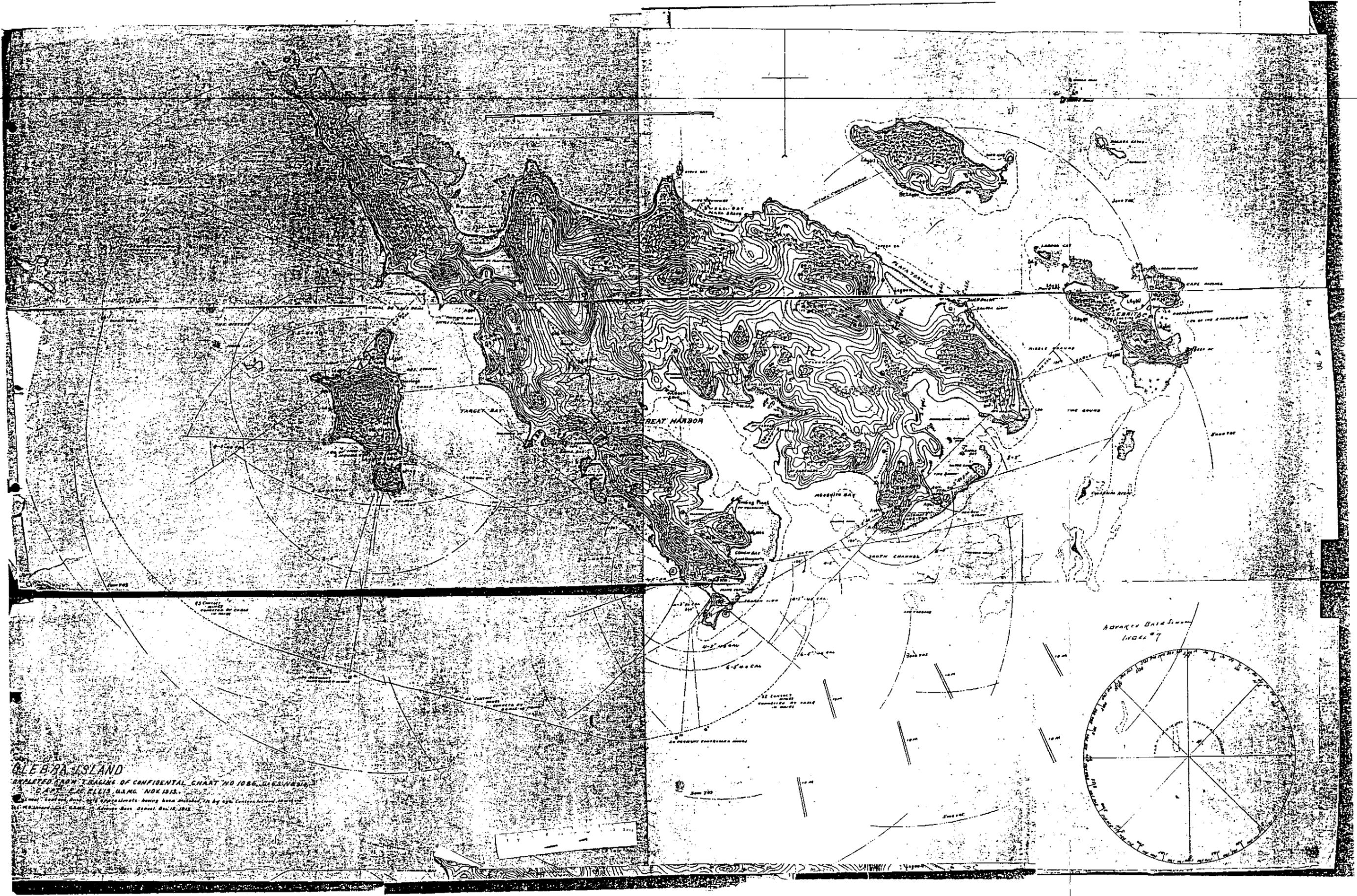
- OUTGRANT SUMMARY -

PARCEL	ACREAGE	TYPE OF GRANT & NO. (RI NO.)	GRANTEE	EXP. DATE
A	1.77	LEASE NOYRI 96983	TOMAS MULERO	15 MAY 1973
B	2.66	LICENSE NOYRI 96917	P.R. PORTS AUTHORITY	30 SEP 1971

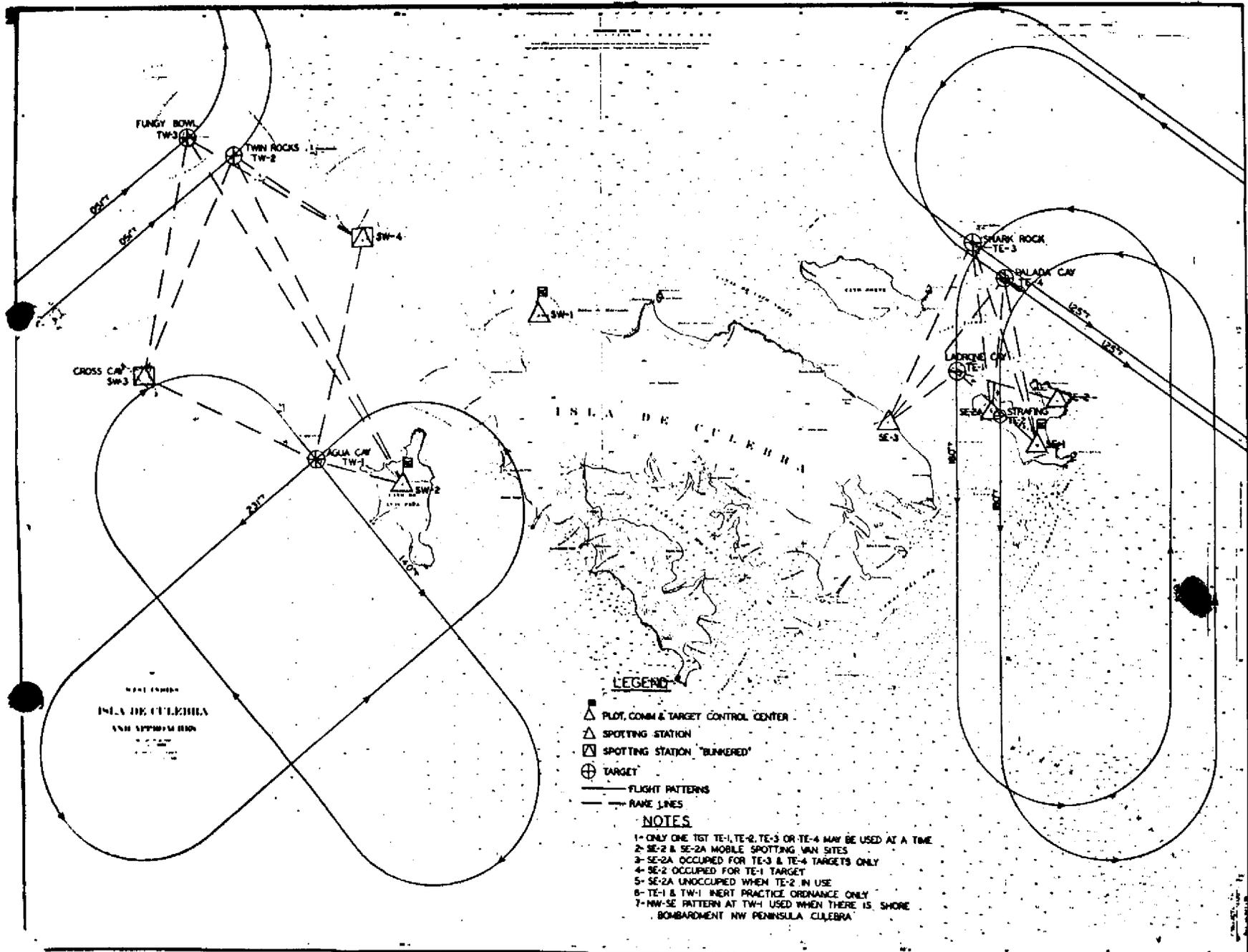
2	AND	UPDATED	27 MAY 1966	C.P.M.
1	AUG	OUTGRANT (B) ADDED	28 MAR 1966	1-75
NO	AND ON CON	DESCRIPTION OF AMENDMENT OR CORRECTION	DATE	APPROVAL
CARIBBEAN DIVISION		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND		
DRAWN: WILSON E. TORRES		US NAVAL STATION ROOSEVELT ROADS		
CHECKED: A.K.P.		CULEBRA ISLAND		
DATE: 23 MAR 64		REAL ESTATE SUMMARY MAP		
SATISFACTORY, 30:		SHEET 1 OF 1		
SUBMITTED:		FEC DWG. NO. 1042388 1-75		
HEAD: MGT DEPT.		SCALE: AS SHOWN		
APPROVED: [Signature]		DATE: [Date]		
CD, CARIBBEAN		SHEET 1 OF 1		







**OLEBA ISLAND**  
 EXTRACTED FROM TREATISE OF CONFIDENTIAL CHART NO 1086, G.E.S. 1913.  
 U.S. NAVY DEPT. OF THE NAVY, WASHINGTON, D.C.  
 1913



**LEGEND**

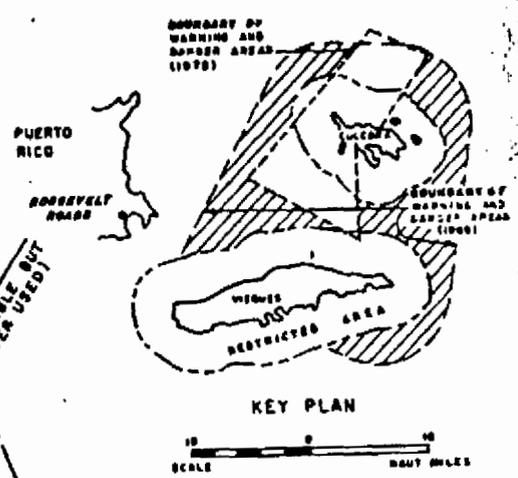
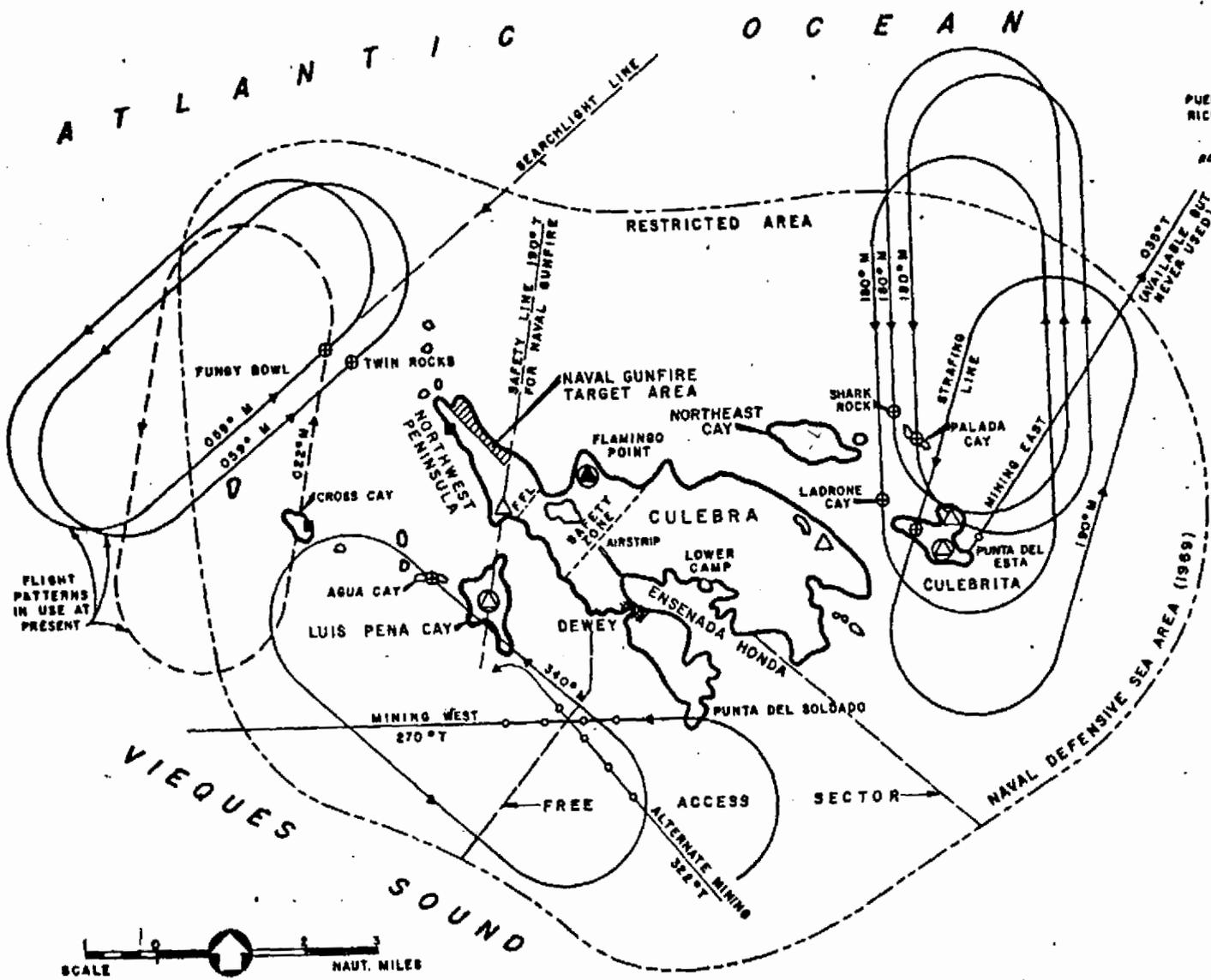
- PLOT, COMM & TARGET CONTROL CENTER
- △ SPOTTING STATION
- ⊠ SPOTTING STATION "BUNKERED"
- ⊕ TARGET
- FLIGHT PATTERNS
- RANGE LINES

**NOTES**

- 1- ONLY ONE TGT TE-1, TE-2, TE-3 OR TE-4 MAY BE USED AT A TIME
- 2- SE-2 & SE-2A MOBILE SPOTTING VAN SITES
- 3- SE-2A OCCUPIED FOR TE-3 & TE-4 TARGETS ONLY
- 4- SE-2 OCCUPIED FOR TE-1 TARGET
- 5- SE-2A UNOCCUPIED WHEN TE-2 IN USE
- 6- TE-1 & TW-1 INERT PRACTICE ORDNANCE ONLY
- 7- NW-SE PATTERN AT TW-1 USED WHEN THERE IS SHORE BOMBARDMENT NW PENINSULA CULEBRA

ENCLOSURE (1)

L-11



- LEGEND**
- ⊙ CONTROL CENTER
  - ⊗ OBSERVATION POST
  - SPOTTING STATION (BUNKERED)
  - △ SPOTTING STATION
  - ⊕ TARGETS FOR AIR TO SURFACE ORDNANCE (1969)
  - FLIGHT PATTERNS (1969)
  - - - FLIGHT PATTERN ESTABLISHED 1971

**NOTES**  
 AT PRESENT TIME ONLY TARGETS AT FUNGY BOWL & TWIN ROCKS ARE USED FOR AIR TO SURFACE ORDNANCE (1972)

**CULEBRA WEAPONS RANGE**

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX M

ARCHIVES SEARCH REPORT CORRESPONDENCE

(Not Used)

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

APPENDIX N

REPORT DISTRIBUTION LIST

ORDNANCE AND EXPLOSIVE WASTE  
 ARCHIVES SEARCH REPORT  
 FOR  
 CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
 CULEBRA, PUERTO RICO  
 PROJECT NUMBER IG2PR006802

APPENDIX N

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Puerto Rico Department of Natural Resources PO Box 217 Culebra, PR 00775	-	1	-

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-ED-DN	3	-	-
ED-G	-	-	1
-ED-H	-	-	1
-SO	-	-	1
-PD	-	-	1
-RE	-	-	1

- I - Final Report
- II - Findings Report
- III - Routed Final Report

ORDNANCE AND EXPLOSIVE WASTE  
ARCHIVES SEARCH REPORT  
FOR  
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE  
CULEBRA, PUERTO RICO  
PROJECT NUMBER I02PR006802

REPORT PLATES

5

4

3

2

1

D

C

B

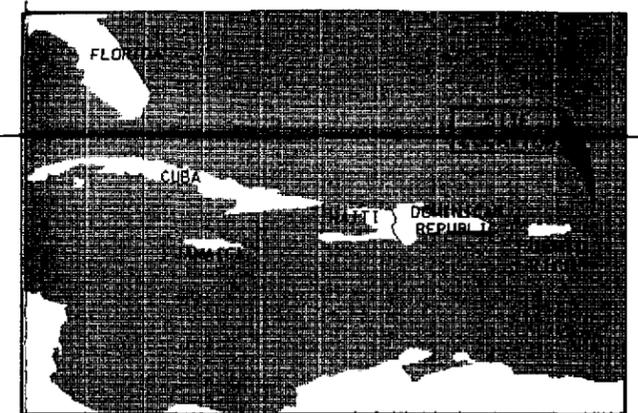
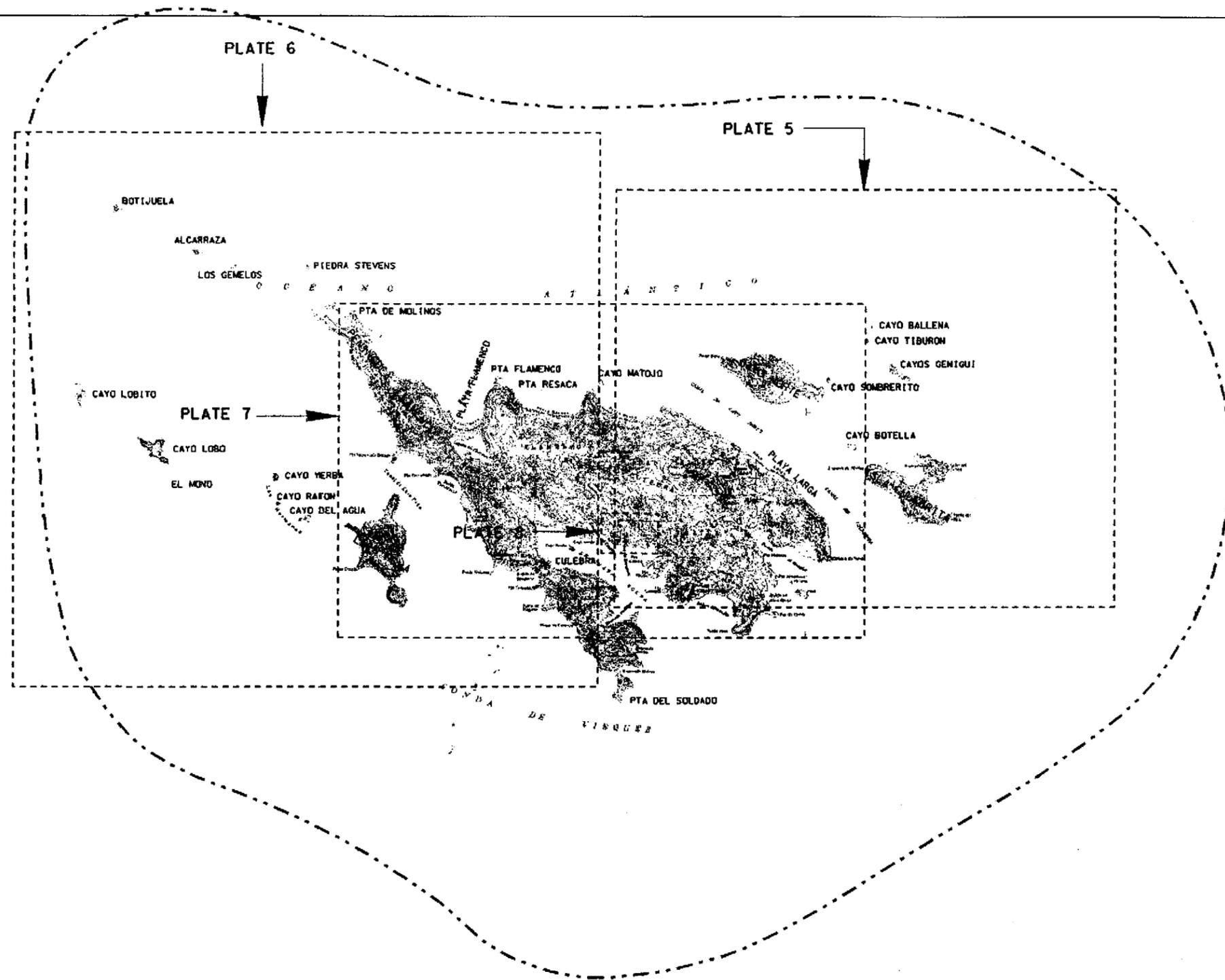
A

D

C

B

A



COMMONWEALTH MAP



VICINITY MAP

**LEGEND:**

--- SITE BOUNDARY  
(NAVAL DEFENSIVE SEA AREA 1969)

**NOTE:**

MAP ABSTRACTED FROM 1948 USGS TOPOGRAPHY. SITE BOUNDARY ABSTRACTED FROM DOCUMENT L-12.



Revisions		Date Approved	
Symbol	Description		
		U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS	
Designed by:	<b>E.O.P.</b>	 U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS	<b>CULEBRA ISLAND</b> <b>PUERTO RICO</b>  <b>SITE MAP</b>
Drawn by:	<b>CAK/JDT</b>		
Checked by:	<b>M.J.C.</b>		
Reviewed by:	<b>D.J.H.</b>	Scale:	Sheet Reference Number:
Approved by:		Date:	Solicitation Number:
	Drawing Code:		Sheet of

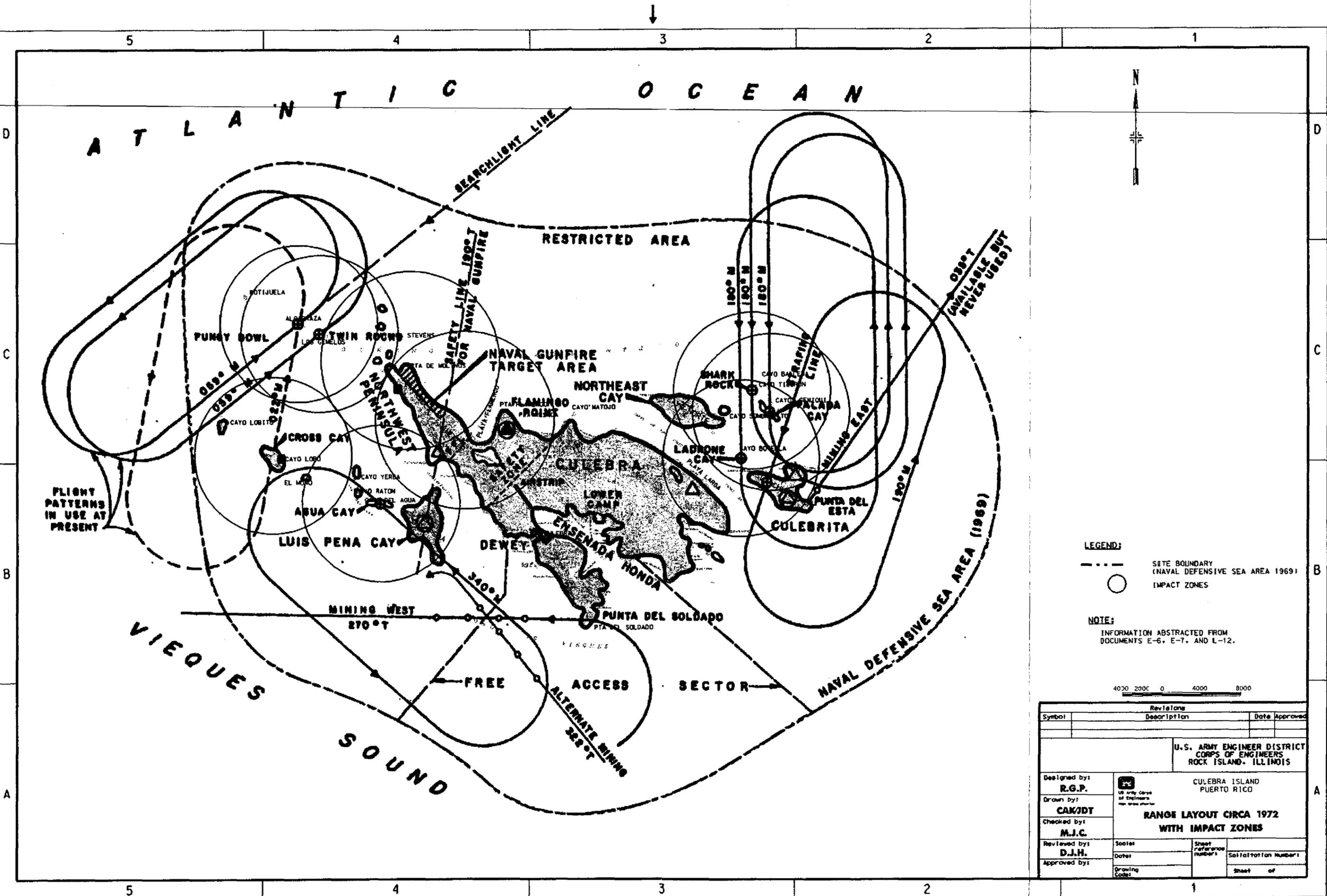
5

4

3

2

1

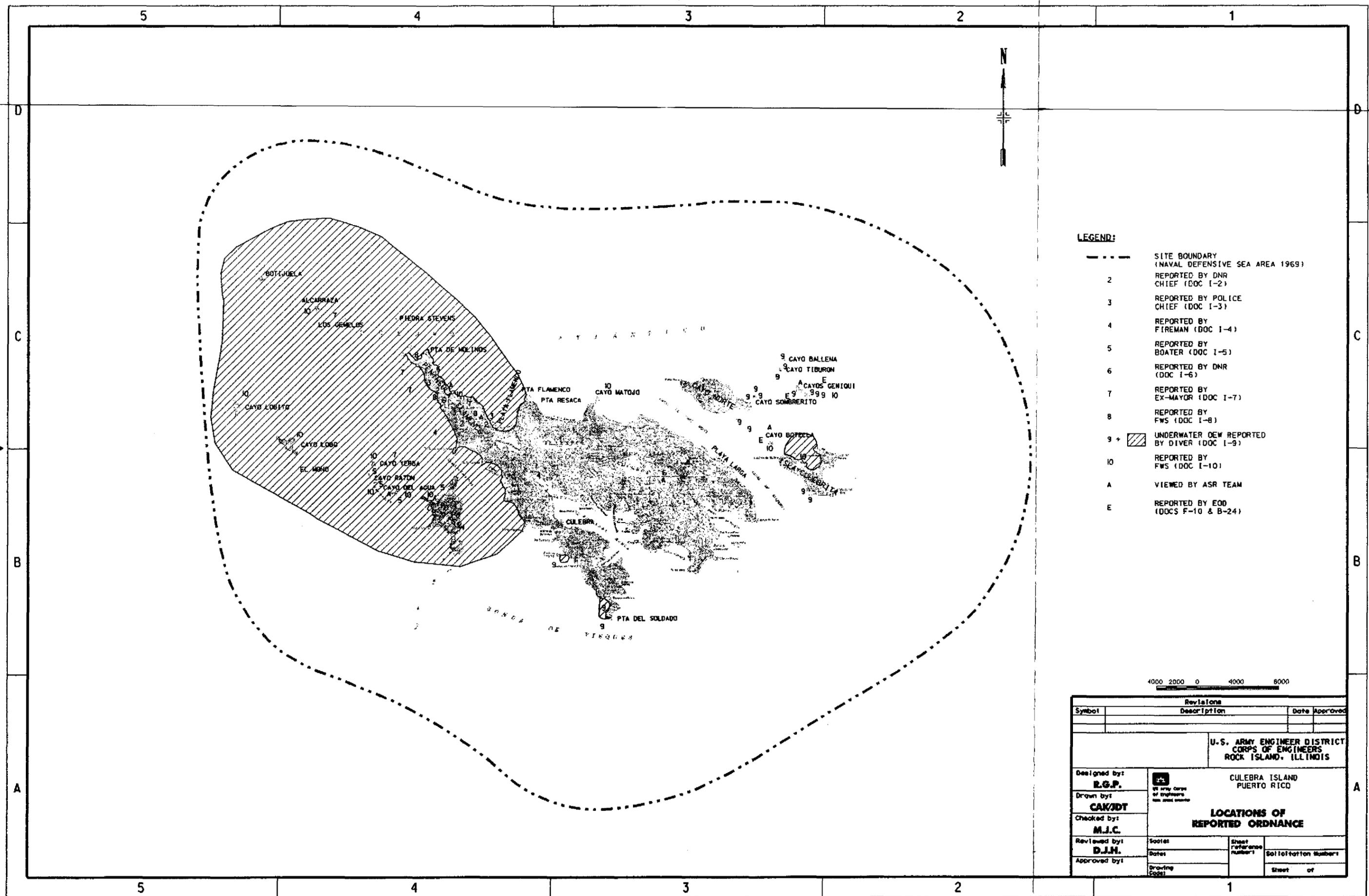


**LEGEND:**  
 - - - - SITE BOUNDARY (NAVAL DEFENSIVE SEA AREA 1969)  
 ○ IMPACT ZONES

**NOTE:**  
 INFORMATION ABSTRACTED FROM DOCUMENTS E-6, E-7, AND L-12.

4000 2000 0 4000 8000

Revisions		Date Approved	
Symbol	Description		
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS			
Designed by: <b>R.G.P.</b>	 U.S. Army Corps of Engineers 1111 11th Street, S.W. Washington, D.C. 20315	CULEBRA ISLAND PUERTO RICO	
Drawn by: <b>CAK/JDT</b>		<b>RANGE LAYOUT CIRCA 1972 WITH IMPACT ZONES</b>	
Checked by: <b>M.J.C.</b>			
Reviewed by: <b>D.J.H.</b>			
Approved by:			



- LEGEND:**
- SITE BOUNDARY (NAVAL DEFENSIVE SEA AREA 1969)
  - 2 REPORTED BY DNR CHIEF (DOC I-2)
  - 3 REPORTED BY POLICE CHIEF (DOC I-3)
  - 4 REPORTED BY FIREMAN (DOC I-4)
  - 5 REPORTED BY BOATER (DOC I-5)
  - 6 REPORTED BY DNR (DOC I-6)
  - 7 REPORTED BY EX-MAYOR (DOC I-7)
  - 8 REPORTED BY FWS (DOC I-8)
  - 9 + UNDERWATER DEW REPORTED BY DIVER (DOC I-9)
  - 10 REPORTED BY FWS (DOC I-10)
  - A VIEWED BY ASR TEAM
  - E REPORTED BY EOD (DOCS F-10 & B-24)

Revisions			
Symbol	Description	Date	Approved
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Designed by <b>E.G.P.</b>	 CULEBRA ISLAND PUERTO RICO	<b>LOCATIONS OF REPORTED ORDNANCE</b>	
Drawn by <b>CAK/DT</b>			
Checked by <b>M.J.C.</b>			
Reviewed by <b>D.J.H.</b>	Scale:	Sheet Reference Number:	Sheet of
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	Drawing Code:		